

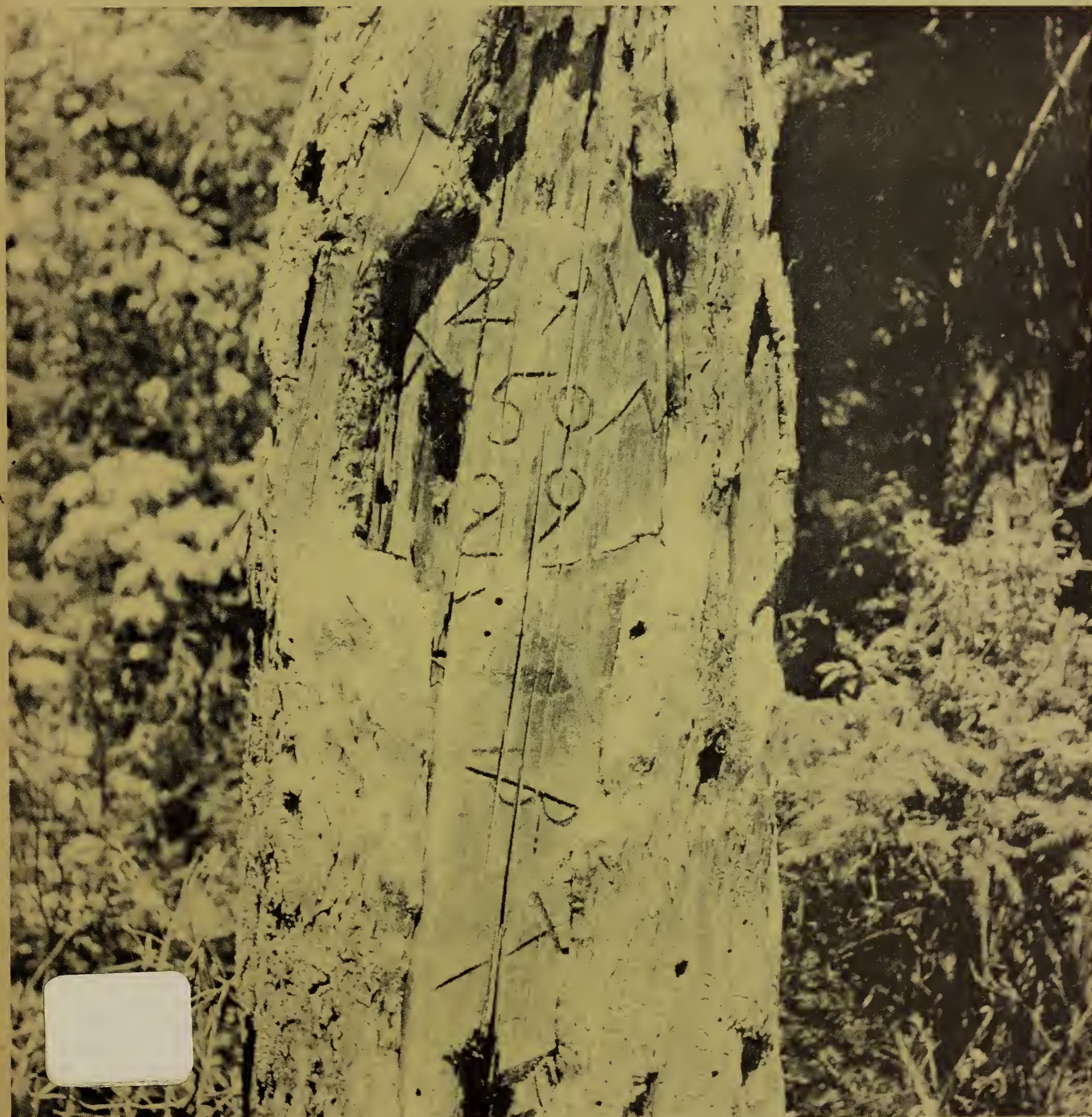
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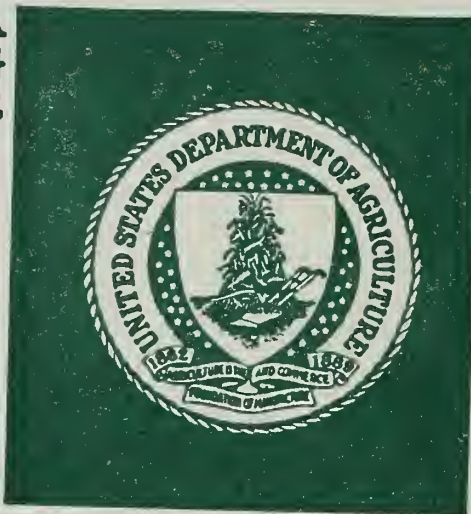
RETRACEMENT AND EVIDENCE OF PUBLIC LAND SURVEYS



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FRONT COVER BEARING TREE

Corner to sections 28-29-32-33

Township 50 north Range 29 west

Michigan Meridian

Bearing tree located in section 29

described as Tamarack 10 N53W 21 links

Established 1852

Recovered in 1972 as shown being
a 14 inch Tamarack with scribing visible.

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RETRACEMENT AND EVIDENCE
OF
PUBLIC LAND SURVEYS

by

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Land Surveyor
Ottawa National Forest
U. S. Forest Service
Ironwood, Michigan

1974

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PREFACE

The official rectangular public land survey on the upper Peninsula of Michigan was made in the period between 1839 to 1855. Today the physical evidence of this survey system is generally in advance stages of decay or completely lost. The retracement techniques in searching for and recovering remaining evidence requires a comprehensive knowledge of the survey system and the work of each of the deputy surveyors making these original surveys.

The text and illustrations in this report are representative of the Ottawa National Forest. The intent is to bring out the techniques used in making retracements and in evaluating and recognizing remaining corner evidence. The recognition of corner evidence and proving corner evidence is vital and mandatory for restoring the positions of the original corners of the public land surveys.

TECHNICAL INFORMATION CENTER
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WASHINGTON, D.C. 20013

JUN 29 1978

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INTRODUCTION

It has been 130 years since William Burt, Deputy Land Surveyor, of the old General Land Office established exterior township lines on the upper Peninsula of Michigan. Mr. Burt, known for his solar compass, was an outstanding land surveyor and an ingenious inventor. A tribute to Mr. Burt is the accuracy with which he established evidence in accordance with the record of his surveys. This accuracy has provided a strong linkage and proof for the recovery of land corner evidence. Unfortunately the footsteps of some deputy surveyors are not as readily retracable or as reliable. Retracement requires an understanding as to the techniques and survey habits of the deputy surveyor.

Section line retracement and corner recovery and corner perpetuation in accordance with the records and physical evidence of the public land surveys are an obligation and responsibility of the land surveyor. The recovery of most evidence in its present state of being is a challenging and often difficult task. Decay, fires, and land usage have accelerated the removal of most obvious identifiable remaining evidence. What was once wood corner posts and line bearing trees is now generally ground level remains. In 30 years of retracement work the percentage of recoverable original evidence of corners has steadily decreased from an average of 70 percent to a present recovery rate of 30 percent by those who are experienced in retracement of evidence. It is reasonable to estimate that all remaining bearing tree evidence of the corners of the original public land survey on the upper Peninsula of Michigan will be gone by the end of this century.

PUBLIC LAND SURVEYS ON OTTAWA NATIONAL FOREST

The initial point for the rectangular public land surveys in the State of Michigan is located in south central Michigan. The principle meridian is identified as the Michigan Meridian.

The general procedures by which the rectangular public land surveys were established on the ground is detailed in the Manual of Surveying Instructions, United States Department of the Interior, Bureau of Land Management. The records for these surveys in Michigan are with the Department of Conservation in Lansing, Michigan and with the Bureau of Land Management in Washington, D.C.

The deputy surveyors made the rectangular surveys under special instructions that presumably were current at the time of the survey contract. The townships in the Ottawa National Forest were mostly subdivided by an east-west centerline across the township, by random section lines north and south from this centerline, and by correcting closures on the return traverse. Not all east-west section lines were measured from section corner to section corner as evidenced by calls for recoverable natural features on the first half mile to the quarter corner and no record of calls for existing features in the second half mile. The one half mile surveyed will show natural feature calls plus two authentic line trees. The half mile apparently not surveyed will show no natural feature calls, but will show two record line trees of which there has been no recoverable evidence on the ground. Also, natural feature calls on the random lines of survey will not check with these same calls on the corrected lines if the two lines were any distance apart. In these cases, the natural feature calls will check on the random line, but will not check on the corrected line between corner positions. In some townships the two halves of the township were surveyed by different crews. One half can be easily retraced and the other half is very difficult because of poor work and very few calls.

How well these public land surveys were established by the deputy surveyors working under contract is reflected in the

examiner's record notes for those townships selected for check surveys. Corners and lines found to be in accordance with the deputy surveyor's record notes were accepted. Those not accepted were resurveyed as independent resurveys, as evidenced by new corner records making bearing and distances reference to rejected corner positions. The survey by the deputy surveyor is the official survey record for the township.

A comparison between the original survey by the deputy surveyor in Township 46 North, Range 32 West, Michigan meridian and that of the examiner's survey for the same township is an example of acceptable performance. On pages 42 and 43 the comparison for the section line north between sections 16 and 17 in this township shows that the survey was made in accordance with survey instructions to the deputy surveyors.

It is to be noted in the two surveys for the same section line that the examiner made additional calls for features not identified by the deputy surveyor. Also, there is a small variance in measurements due to calls made to the nearest half length of the chain by the deputy surveyor. Although the survey by the deputy surveyor was well executed, a familiarity with his techniques of measurement, accuracy of measurements, and with omissions are all factors that must be evaluated and understood by retracement in recovery and restoring a corner position.

EVIDENCE OF PUBLIC LAND SURVEYS

By law the physical evidence of the public land survey and the record evidence of that survey as accepted and approved is forever fixed as the true location.

The original corner monuments, being wood posts, are seldom recovered due to loss by removal or decay. Corner search is concentrated on corner accessories near the corner position and on natural feature calls and old obscure marks along the section line leading to the corner position.

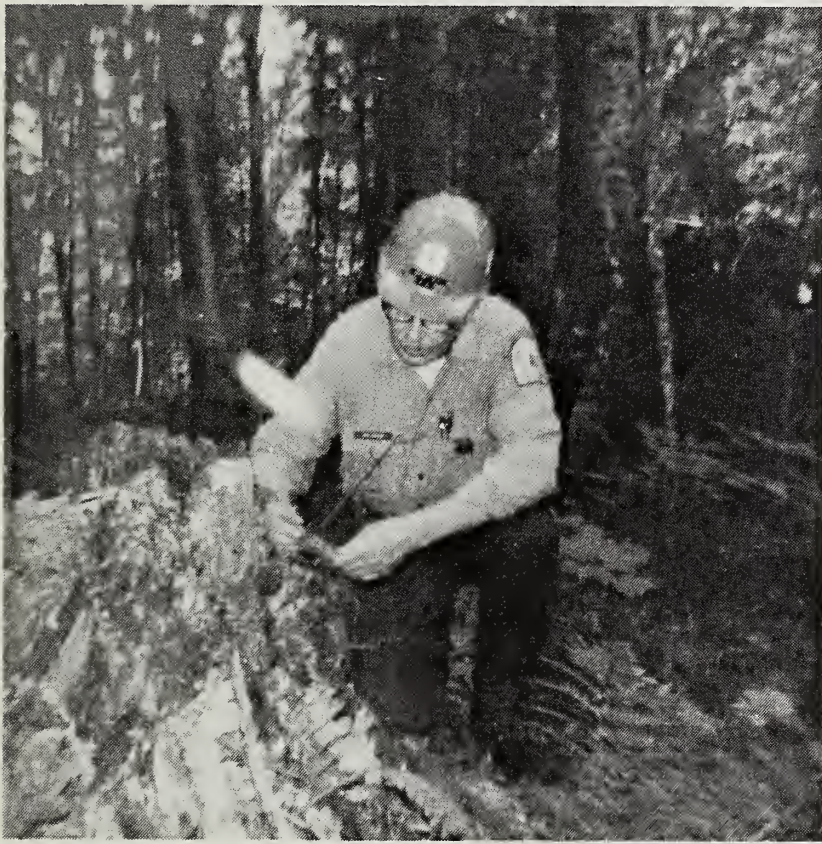
While most of the well defined natural features as called for in the record notes are recoverable, very few of the original line and bearing trees are still live trees. Many are wind thrown or are stumps and windfalls in advance stages of decay.

The species of tree selected as line and bearing trees, the maturity of these trees at the time of the survey, and site conditions are all factors in recovering the evidence of these trees. The probabilities of recovering evidence are fair to good if the trees were cedar, tamarack, hemlock, or pine. Yellow birch may still be recovered on slow growing sites, but usually is in advance stages of decay. Little evidence remains if the trees selected were red maple, sugar maple, fir, or spruce. Short lived trees such as aspen and balsam have rare recovery possibilities.

The blazing and scribing of the bearing tree provides the most positive evidence of its identity, but these trees have deteriorated to a condition whereby only about one percent can be recovered with blazing and scribing still visible. The recovery of the remaining evidence, in advance stages of decay, requires all the experience resources of the retracement surveyor to establish the necessary proofs of corner recovery.

A chain of evidence for the public land surveys is any maintenance and any recorded or unrecorded surveys subsequent to the public land surveys. Such evidence may or may

not be accepted as a recovery or perpetuation of the corners of the public land surveys. All too often the original corner evidence is recovered at a location other than that indicated by subsequent records. On the positive side these subsequent records and evidence have been proven to be authentic recovery and perpetuations of the original corner position. Thus the evaluation of evidence requires a detailed knowledge of the history attached to a corner position.



**Examining Yellow
Birch Bearing Tree
Stumps**



RETRACEMENT OF PUBLIC LAND SURVEYS

The first rule of retracement for the physical evidence of a survey system is to have copies of all pertinent survey records in the hands of the retracement surveyor. The probabilities for recovering original corner evidence without the records to verify the evidence are very limited. Generally, recoverable evidence is not readily conspicuous to even those with years of retracement experience. It becomes "grass roots" search and examination of possible and probable evidence before proof can be established that a recovery has been made.

Tangible and intangible support for retracement are maps, aerial photographs, local testimony, and knowing the abilities and performance of each of the deputy surveyors, obtained only by the experience of retracement.

Techniques used to recover corner evidence are:

1. Advance Preparation - The assembling of all pertinent record notes for the retracement bears repetition.

An invaluable tool for corner search is the aerial photograph and the U. S. Geological Survey topographic quadrangle map. The land line network shown on the quadrangle maps is a general guide to corner and line location. The transfer of this land line network in combination with the land line network that may be visible on the aerial photograph provides the picture of the retracement area. Large scale and leaf-off aerial photography is preferred for locating and comparing natural feature calls with the official record notes of the original Government survey. This is done by scaling measurements along the section lines on the aerial photograph.

Copies of the record notes including any from subsequent surveys, a copy of the township plat, maps, and aerial photographs are the paper tools by which to begin a retracement. The basic hand tools are the compass, the tape, a stereoscope, and usually a hand axe. The retracement

surveyor's field book becomes the record of his field search and corner recoveries.

2. Starting Point - The preferred technique for re-tracement is to begin at the nearest recovered original corner. Without any known corners a start is made on or near the section line and then determine the approximate distance to the nearest corner by scaling on maps or aerial photographs. To find a corner from a projected location on an aerial photograph has very limited success other than to put one in the general search area.

3. Retracement along Section Line - From the point of beginning the retracement proceeds along the section line as near as possible and as guided by compass, map, and aerial photograph. Knowing the distances along the line is essential for retracement. Pacing is usually not as accurate as needed for comparison with the record. We find "rough" chainage, such as pulling a 300 foot tape along the ground, will provide the accuracy for comparison with natural feature calls. Chainage along the section line has the advantage of better locating the corner search area and provides support for corner recovery in relation to natural feature calls and adjacent corners.

4. Corner Search Area - The corner search area can be limited to a few feet if the retracement follows the footsteps of outstanding deputy surveyors. If there were errors in the record calls, the search area can be at some distance from the record. It becomes necessary to accept or reject calls and place any errors at the proper locations.

The recovery of the original corner monument and/or scribed original bearing trees is the ideal but rare recovery. The first concentration of effort is for the remains of the original bearing trees as stumps, as decayed wood, and often as stump holes and roots. The identification of decayed wood, wood remnants and of new growth in the area determines whether there is to be a recovery of original evidence.

Basic clues of bearing tree recovery are the remains of the tree trunk, stump, and the roots. For instance, bark on the roots is the last to decay in species as yellow birch, white pine, red pine, and cedar. For sugar maple, very black wood flakes off in scales. If the bearing tree was hemlock, the hemlock stump may be found below the raised root system of a yellow birch. That is, a decayed hemlock stump is a choice site for sprouting yellow birch seeds. Hemlock, on decaying, leaves a reddish-brown stain in the soil and hemlock knots are found along the decayed fallen trunk. The size and direction of the knots are a clue to the stump end of the tree. Basswood or red maple sprouts around a decayed stump or stump hole will indicate the species and the location of the original bearing tree as both species sprout from the decayed stump. White pine is soft and light in color and has a distinct smell. Red pine has a distinct smell, is harder to chop than white pine, and is resistant to ground fires. Cedar and tamarack are found in or near a swamp. Cedar is usually detected by the fragrant odor of the wood and the shred like bark. Tamarack is highly rot resistant, but very few of the original bearing trees are alive. The diameter of tamaracks are about the same as the record due to the killing of these trees by insects about 1900. Tamarack decays by outer layers of wood.

On recovery of the evidence of an apparent original bearing tree, the corner position is located by the record distance and inverse record bearing from this evidence. From the indicated corner point, the position of the other record bearing trees to this corner are located by record bearing and distances. If the remains of the called for bearing trees are identified, support is provided for an original corner recovery. Additional verification may be essential if there are any doubts. At the indicated corner position the surface of the ground is carefully examined for the remains of a decayed wood post or for discoloration of the soil. In heavy clay soil the dimensions of the corner stake and decayed wood fragments remain. In very wet soils or in water the bottom of the original corner post is as perfectly preserved as the day it was placed.

Not less than three items of record evidence are essential as proof of recovery of the original corner position unless original scribing is found as described in the record notes. The record bearing and distance from each of two decayed apparent bearing tree stumps intersecting at a point is not sufficient proof of a corner location. If two record bearing trees are of different species and are recovered as such it can strengthen the acceptance of this apparent evidence. If the corner has the remains of three recoverable apparent original bearing trees, this is usually sufficient proof that a corner recovery has been made. For those corners with only two record bearing trees, the recovery of the decayed remains is uncertain. Measurements to the nearest record natural feature calls along the section lines and/or to the nearest recoverable corners is needed in support that the physical remains of the two trees are the original bearing trees. Collateral support is the notes and evidence of any subsequent surveys of record, of fences or marked lines leading to or from the apparent corner position, and qualified local testimony.

At some corner locations conflicting corner markers may be found. If the original corner evidence is completely lost by decay or removal, the acceptance or rejection of apparent evidence may be dependent upon nearby natural feature calls of record. Any conflicting evidence must yield to the recovery of original corner evidence.

One of the purposes of the original and official Government survey was to determine the location and suitability of the land for agriculture. By identifying the measured distances of lakes, swamps, streams and topography along the section lines, a significant record for retracement was placed in the hands of the retracement surveyor. These natural feature calls correlated with the record measurements from a corner has become an important control technique for retracement. These calls in the vicinity of a corner have been the support in proving meager corner evidence and have been the remaining means for corner restoration in lieu of proportionment measurement from adjacent recovered corner positions. The natural feature evidence recovered must be certain in accordance with the official Government record. In using natural feature calls to restore a corner

position or to prove a corner position, it must be established that the feature, such as a stream, is at the same location as the time of the original survey. If not, the location of the old stream channel must be determined. The feature must be well defined and at the location of the record notes to be accepted as supporting or controlling evidence for the recovery or restoration of an original corner position. Not less than two recovered record natural features at record measurements along intersecting section lines are required for corner restoration from record features. This technique requires an accurate knowledge of the surveys by the deputy surveyor.

The judicious evaluation of corner evidence is a correlation between the written records and the physical evidence of a survey. The recovery and proof of recovery of the original survey evidence is a demanding art on the retrace-ment surveyor. He must support all decisions made in the acceptance or rejection of apparent and conflicting evidence. He must determine if the evidence found is authentic in relation to the original survey or if he must resort to proportionate measurement from adjacent controlling corner positions in accordance with the rules for corner restoration. The decision made is that which will be in compliance with rules and laws and is the best solution for with-standing the test of any challenge or to challenge conflicting evidence.

TRAINING REQUIREMENTS FOR RETRACEMENT

Around 1900 Justice Cooley of the Michigan Supreme Court and F. Hodgman, author and surveyor, identified the role and function of the land surveyor on retracing and restoring the evidence of the public land surveys. The guidance by Messrs. Cooley and Hodgman is must reading for the land surveyor. Briefly, Justice Cooley makes it plain that it is the duty of the land surveyor to evaluate all evidence before he can assume a corner to be lost and arrive at alternate solutions. Mr. Hodgman indicated that while one surveyor fails in finding evidence of an original corner, another surveyor better qualified to discover evidence will readily recover a corner. Now 70 years later following fires, continuing decay and destruction, and more intense land uses, the remaining evidence is considerably more difficult to recover.

The candidate for training in retracement for the evidence of a survey system must have the basic qualifications and aptitudes for corner search. It may require several years under a qualified trainer to acquire the necessary expertise. The period of time needed before the candidate can independently evaluate evidence and arrive at a decision is determined to a large extent on native ability and being able to recognize evidence supported by survey records.

Training in the search for survey records is as variable as the search and evaluation of the physical evidence. Normally training in the records of the public land survey system is routine. The finding and evaluation of recorded and unrecording survey records subsequent to the original survey can be uncertain. It becomes a matter of cultivating a rapport with the local surveyors and populace and with the custodian of the public records.

The techniques of retracement subsequent to the assembly of all pertinent and available records can be done by use of aerial photographs, chainage and the ever important local knowledge of residents. Chainage from a known corner location along the section line is the basic technique for

retracement. It provides a means of checking record call measurements and getting the feel of how the original survey was established. Aerial photographs with section lines projected thereon from maps and records is a supporting tool of retracement.

The increasingly difficult task of retracement is to identify the decayed remains of the physical evidence of the original Government survey. Basic training in dendrology and wood technology is essential in recognizing tree species, growth, and wood characteristics of bearing trees. The relation of record measurements to recoverable evidence must be evaluated for acceptance or rejection. Errors in the record must be isolated. The presence of old fence and occupancy lines must be evaluated for acceptance or rejection in support of a corner position. Conflicting evidence must be screened. Testimony must be judged for reliability. In substance retracement training means becoming familiar with all available survey records, and with the work of each of the deputy surveyors, with the work of past and present local surveyors, with the origin of marked lines of land usage, with the local public records, with local long time residents and property owners, and being able to make an evaluation that will support the decisions made in the acceptance or rejection of evidence or apparent evidence.

The qualifications for retracement must be comprehensive with the emphasis on exposure to the physical evidence of the original Government surveys establishing the rectangular public land survey system. A narrative coverage of the requirements for retracement is limited to a generalization of the basic problem of recovering and proving evidence. The illustration and exhibits as the appendix to this report are intended to provide a cross section of the duties and requirements for retracement.

GUIDANCE FOR RETRACEMENT

The reference guidance for the retracement of the public land surveys and for the restoration of lost corners is set forth in the Manual of Surveying Instructions, United States Department of the Interior, Bureau of Land Management. An accurate knowledge of the rectangular system of the public land surveys is the basic prerequisite for retracement. The record notes of the public land surveys are mandatory for the search and recovery of the corners of the rectangular survey. The accuracy of these notes in relation to the physical evidence established by the survey is determined by the retracement.

The calls for features along the section line and the recovery and identification of these features determines whether the retracement is following in the footsteps of the deputy surveyor. Generally the retracement will show results such as:

1. Line tree distances check close with the record.
2. Very good calls on streams less than 50 links wide with calls being to the middle of the stream. The course of the stream is called at the exact point of the intersection of the stream and not the general direction of the stream. On wider streams calls are recorded for both the right and left banks.
3. Swamp calls are given at the point of intersection along the section line, but the calls are usually to the one-half chain. Often the edge of the swamp is not well defined.
4. Ledge or outcrop calls along section lines are good if the area is small.
5. The calls for ascend, descend, and top of ridge are generally good, but not as accurate as small stream or line tree calls.

The record notes identify 2 to 4 line trees per mile. The identification of these trees or remains is dependent on accurate measurement from the respective corners. The recovery of positive evidence of a line tree provides support rather than the means for corner restoration unless the tree be close to the corner and has corollary support for location. Line trees control the direction of a section line.

In some township surveys, the natural feature calls are on the random lines and do not check the record distances on the corrected line if the two lines were any distance apart.

The reliance on record calls along the section line is directly related to learning the performance of each of the deputy surveyors. In a like comparison is the care used in doing the retracement. The retracement must not only develop a "feel" for what the deputy surveyor did, but must establish the proofs for the acceptance or rejection of evidence and apparent evidence. Locating old streambeds, changing lake shoreline, old swamp edges, and entrance and exit points across natural features are all functions of retracement.

In searching for a corner within a spruce or tamarack swamp, the tamarack snags are remains of tamarack trees killed by the larch sawfly about 1900. The remains of down tamaracks can be found under swamp moss or on the swamp surface. In a present even age spruce-tamarack swamp the limits of the swamp at the time of the original survey is evidenced by stumps, large windfalls, and large tree stubs. If the area has been flooded, the control has been lost at this location. However and obviously, the changed location of stream, lake, or swamp edges can never be used as being in accord with the record notes.

Fire has been a major destroyer of corner evidence. In fire areas the best possibility of corner recovery is on the north side of large rivers and lakes, in deep ravines, and in wet swamps where the fire was less severe or bypassed. The recovery of meander corners along the edges of water can be good in fire free areas when a cedar tree was marked for the meander corner.

Identification of record evidence is the key to retracement. The recovery of positive called for evidence will require yielding of record measurements. No corners have ever been recovered at exactly 40 chains or at 80 chains, or at exactly true cardinal direction. Care must be used in identification of the corner called for. A closing corner on the township line cannot be identified as the standard corner unless the record notes show that the closing line terminates at the standard corner. Meander corners, witness corners, or reference corners are not to be taken as a nearby section or quarter corner positions which is possible without reference to the record notes. Thus the retracement surveyor is bound by the rule that the physical evidence of the original township, section, quarter section, and meander corners must stand as the true corners of subdivision which they were intended to represent and will be given controlling preference over the recorded direction and lengths of lines.

CONCLUSIONS

For those who have observed and retraced the physical evidence of the public land survey system over a number of years the decay and loss of this evidence has been a concern.

On the Ottawa National Forest where 70 percent of the corners were recoverable in the 1930's, we now have to expend several times the effort to recover less than half of the corners. The difficulty in recognizing the remaining physical evidence of corners is that most of these remains are bearing tree stumps and roots in advance stages of decay.

The techniques for retracement and the evaluation of evidence have been established by field experience over a period of years. The test is being able to furnish the necessary proofs on the acceptance or rejection of corner evidence and having the decision made upheld under challenge.

Retracement is an art that must be transmitted to the apprentice by one to one training experience. This training period may extend for several years and may never culminate for either the trainer or the trainee. Each corner evaluation must be treated on the basis of the evidence recovered. With the increasing problems of lost corner evidence and with the problems of apparent evidence established subsequent to the public land survey judicious care must be used in determining evidence that can be supported and that which is not in accordance with the records of the public land survey. The demands of retracement makes it a unique and basic function of land surveying.

SUMMARY

The foundation of land surveying is the retracement and recovery of evidence of the original surveys and the perpetuation of this evidence by substantial monumentation and by documentation of corner perpetuation for the public records.

The art of retracement for the physical evidence of the public land surveys, now in advance stages of decay, is an obligation and demand on the technical skills and native abilities of the land surveyor. The development of skills for the evaluation of the remaining physical evidence of the public land surveys requires several years of experience to reach the degree of expertise required.

The Ottawa National Forest has perpetuated by monumentation and corner documentation 1800 corners of the public land survey. This represents 20 percent of the total job for the entire Forest. As such the retracement, recovery, and the restoration of the remaining corners is imperative for the title lines and title rights of ownership and administration dependent on the physical evidence of the public land survey system.

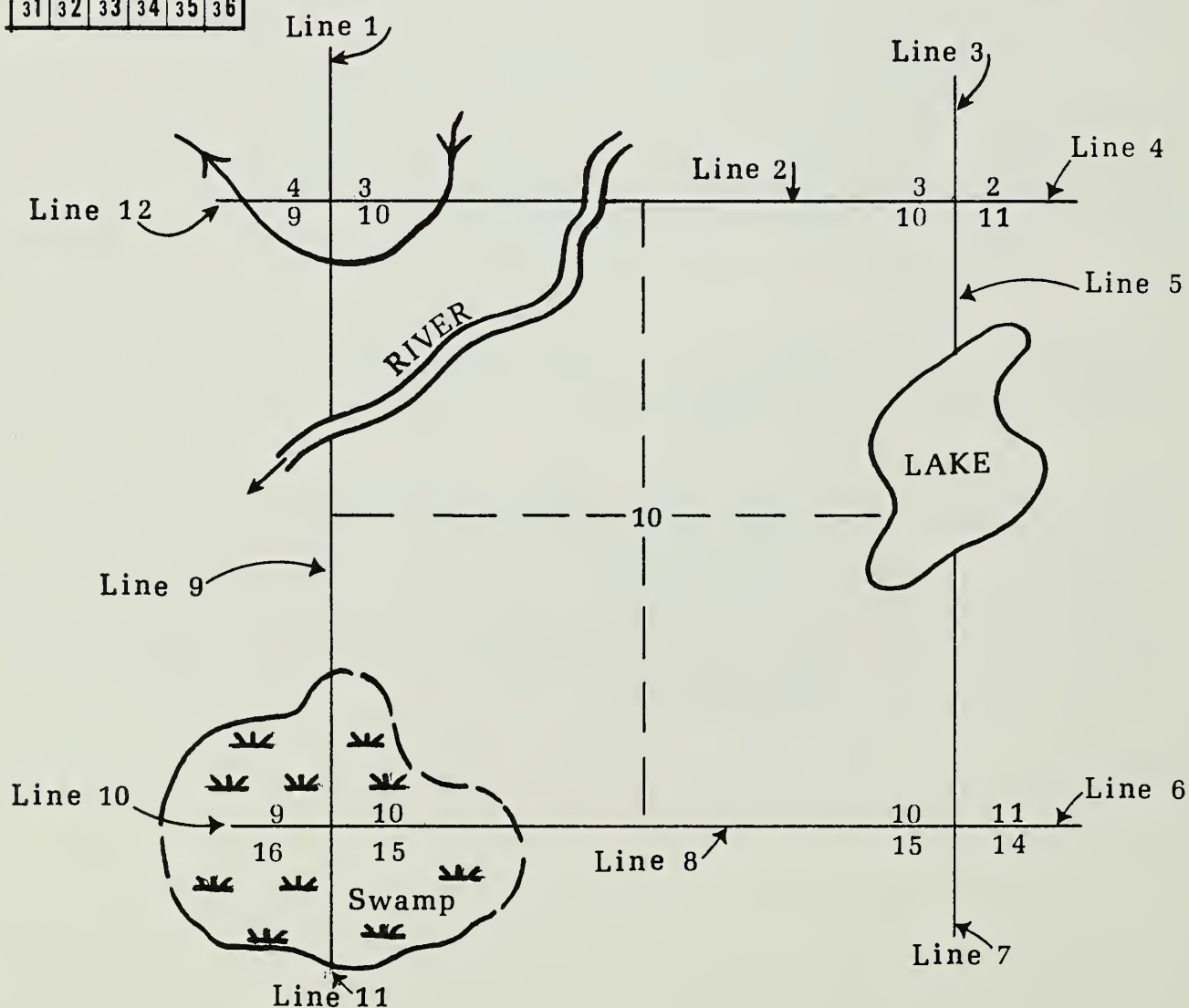
The guidance and rules for the recovery and restoration of the corners of the rectanguled public land surveys are set forth in the Manual of Surveying Instructions, United States Department of Interior, Bureau of Land Management. Compliance with these instructions is a basic and mandatory requirement for retracement.

SECTION LINE ESTABLISHMENT

BY

GENERAL LAND OFFICE

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



ORIGINAL FIELD NOTES
(abbreviated)

Line 1

S. 9' E. Corrected between sections 3 & 4
38.60 Set 1/4 section post
50.15 Hemlock 10" diameter
69.05 Sugar 14" diameter
78.06 Set yellow birch post for corner to sections
 3, 4, 9 & 10.
 Y. birch 10" S.30°W. 17 lks.
 Y. birch 16" N.50°E. 40 lks.

Line 2

N.89°53'E. Corrected between sections 3 & 10.
7.42 Y. birch 16"
15.75 Brook 2 lks. Course south.
28.65 Spruce 8"
35.00 Enter wetland. Course SW.
37.50 Stream 50 lks. Course SW.
40.00 Set spruce 1/4 section post
 Spruce 7" S.40°E. 10 lks.
 Fir 6" N.36°W. 42 lks.
46.25 Leave wetland. Course SW.
47.15 Hemlock 12" and ascend hill. Course NE.
62.75 Top of hill. Course NE.
68.63 White pine 14"
80.00 Corner of sections 2, 3, 10, & 11.

Line 3

S.15'E. Corrected between sections 2 & 3.
38.00 Set 1/4 section post.
48.88 White pine 26"
67.21 Fir 8"
78.00 Set fir post corner to sections 2, 3, 10, & 11.
 White pine 20" N.18W. 16 lks.
 White pine 16" S.42°E. 52 lks.

<u>Line 4</u>	
N.89°56'E.	Corrected between sections 2 & 11.
7.54	Yellow pine 26"
20.75	Enter swamp. Course NW.
 <u>Line 5</u>	
S.13'E.	Corrected between sections 10 & 11.
10.75	Fir 12"
15.50	Intersect lake and set meander corner post.
	Yellow pine 6" N.47°E. 21 lks.
	Yellow pine 6" N.21°W. 35 lks.
40.00	Quarter Corner in lake.
48.60	Leave lake and set meander corner post.
	White pine 10" S.52°E. 40 lks.
	White pine 6" S.25°W. 25 lks.
62.10	Yellow pine 8"
80.00	Set post corner to sections 10, 11, 14, & 15.
	Fir 8" S.15°E. 28 lks.
	White pine 48" S.45°W. 18 lks.
 <u>Line 6</u>	
S.89°36'E.	Corrected between sections 11 & 14.
6.02	Hemlock 24"
 <u>Line 7</u>	
S.13'E.	Corrected between sections 14 & 15.
10.50	Descend hill gradually. Course NE.
 <u>Line 8</u>	
N.89°56'W.	Corrected between sections 10 & 15.
8.05	Hemlock 14"
32.05	Ascend hill. Course SW.
34.00	Top of hill. 40 feet.
40.12	Set sugar 1/4 section post.
	Yellow birch 24" S.25°W. 43 lks.
	Sugar 18" N.45°E. 58 lks.
	Descend hill gradually.
58.50	Enter tamarack swamp. Course NW & SE.
76.82	Tamarack 16"
80.24	Section corner

Line 9

S.16'W. Corrected between sections 9 & 10.
8.25 Brook 2 lks. Course SW.
10.50 Ascend hill 20 feet. Course SW.
14.75 Top of hill.
16.00 Descend hill.
30.25 Foot of descent & enter swamp. Course NE & SW.
31.50 Stream 50 lks. Course SW.
33.75 Leave swamp. Course NE & SW.
34.15 Hemlock 10"
40.00 Set spruce 1/4 section post.
 Hemlock 8" N.10°E. 14 lks.
 Basswood 9" S.48°W. 54 lks.
52.25 Yellow birch 8"
60.50 Enter tamarack swamp. Course E. & W.
73.80 Tamarack 10"
80.00 Set tamarack post. Corner to sections 9, 10,
 15 & 16.
 Tamarack 10" S.15°E. 28 lks.
 Tamarack 12" S.35°W. 15 lks.

Line 10

N.89°55'E. Corrected between sections 9 & 16.
58.10 Enter tamarack swamp. Course N. & S.
70.25 Tamarack 8"
80.00 Section corner

Line 11

S.15'W. Corrected between sections 15 & 16.
8.12 Spruce 6"
18.35 Leave tamarack swamp. Course E. & NW.

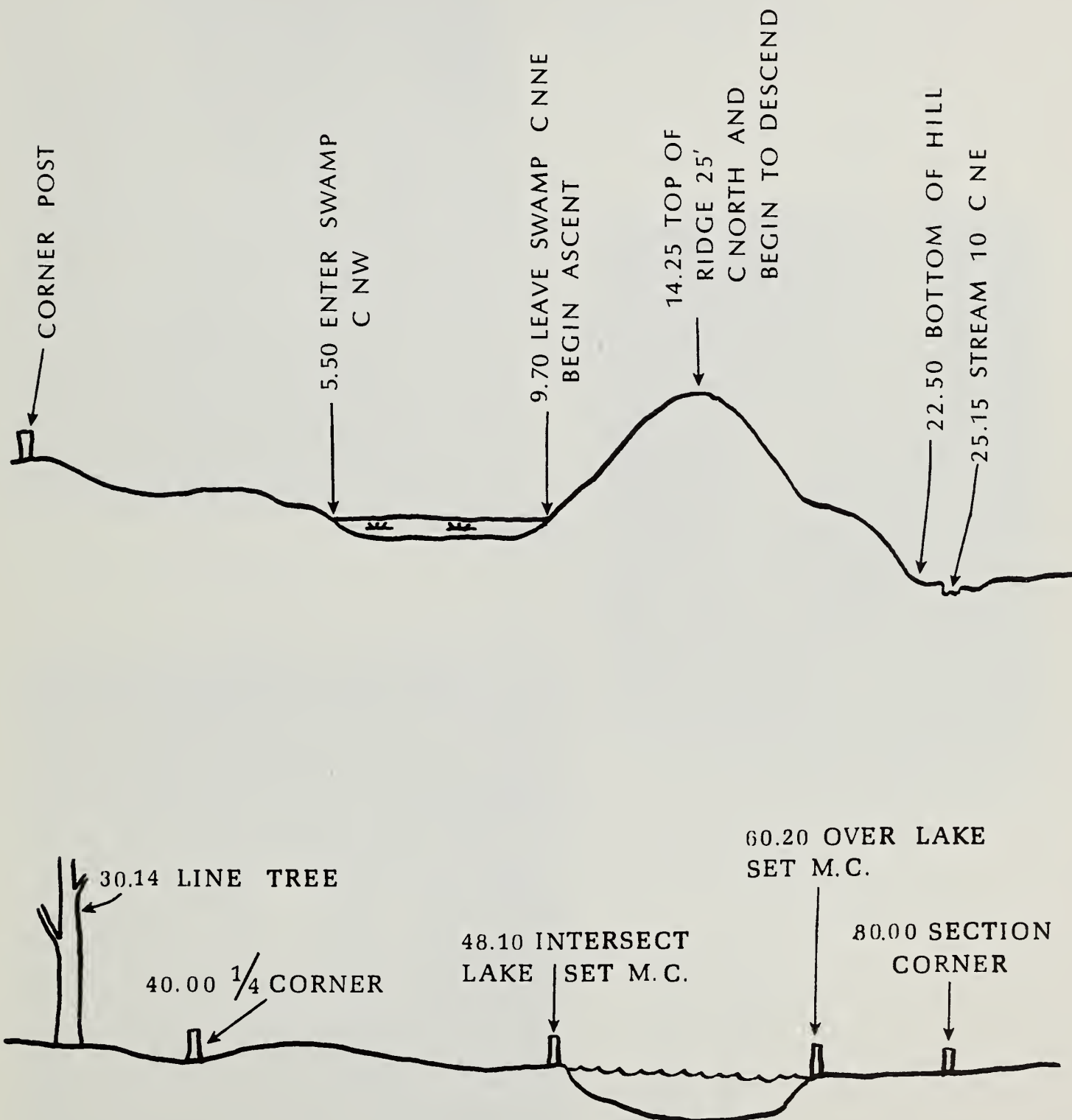
Line 12

N.89°56'E. Corrected between sections 4 & 9.
65.10 Brook 2 lks. Course NW.
80.50 Section corner

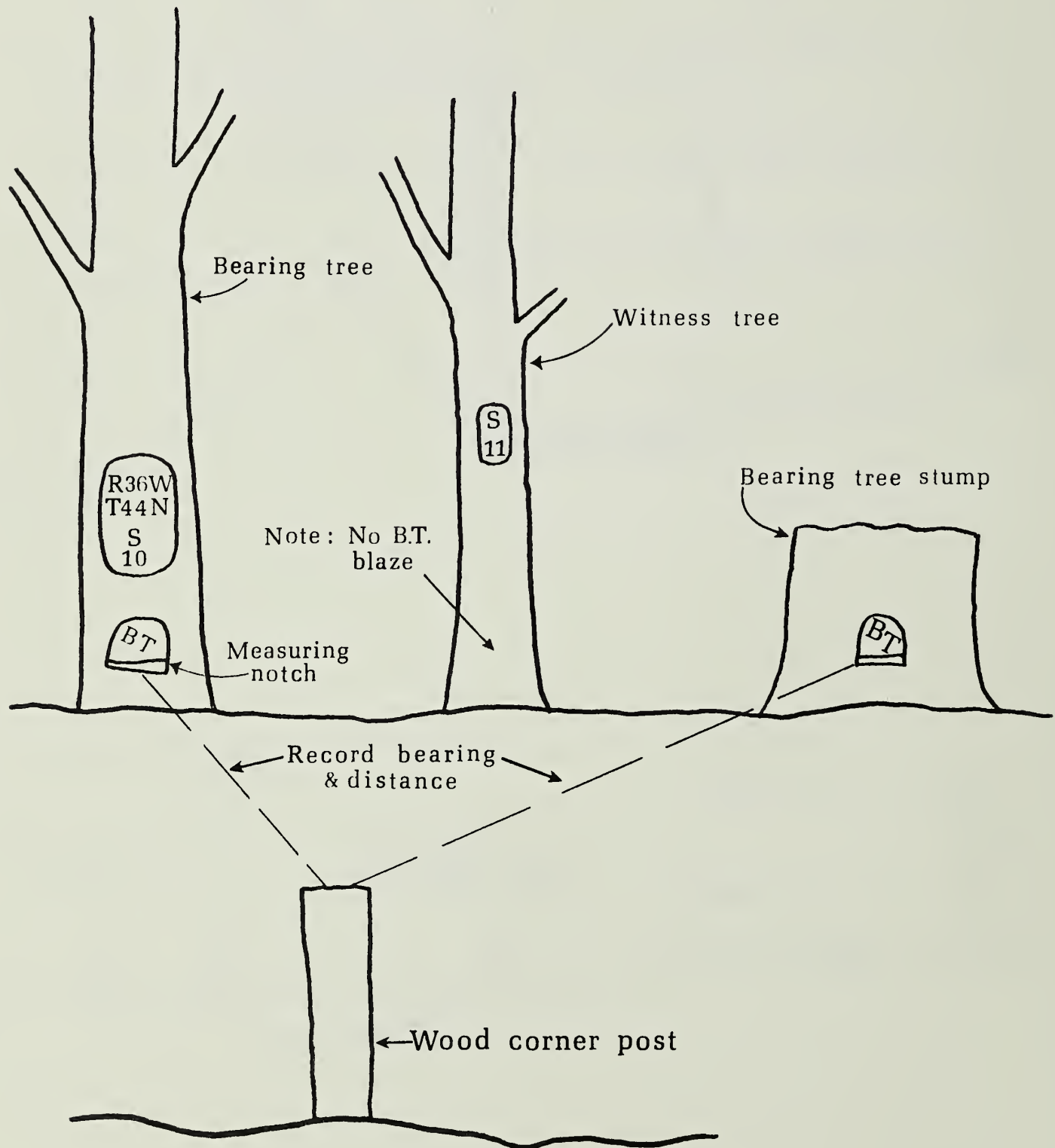
Retracement and Corner Recovery
(Corner to Sections 3-4-9-10)

1. At 9.55 chains North (78.60 minus 69.05) found stump hole with sugar maple wood and roots - Line 1.
2. At S.30°W. 17 lks. found a large decayed yellow birch stump (bearing tree remains) - Line 1.
3. At N.50°E. 40 lks. found a large stump hole (bearing tree location) - Line 1.
4. At 15.75 chains east of corner position a small brook, course south - Line 2.

SECTION LINE PROFILE



BEARING AND WITNESS TREES





Measuring Notch
White Pine B.T.



Measuring Notch
Hemlock B.T.

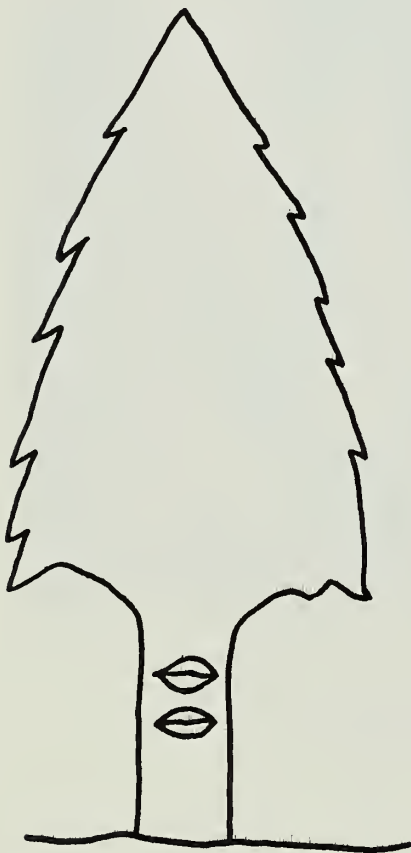


White Pine
Witness Tree

LINE TREES

Line tree with hacks
or notches

Front View



Distance, species and diameter of line trees
recorded in original field notes.

Line tree

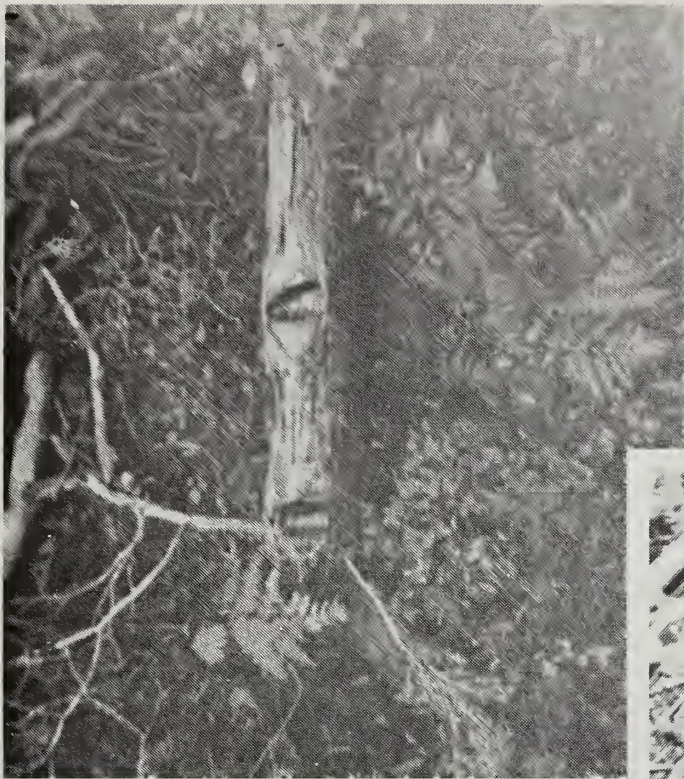
Side View



Blazed tree, on
line, no hacks
or notches.



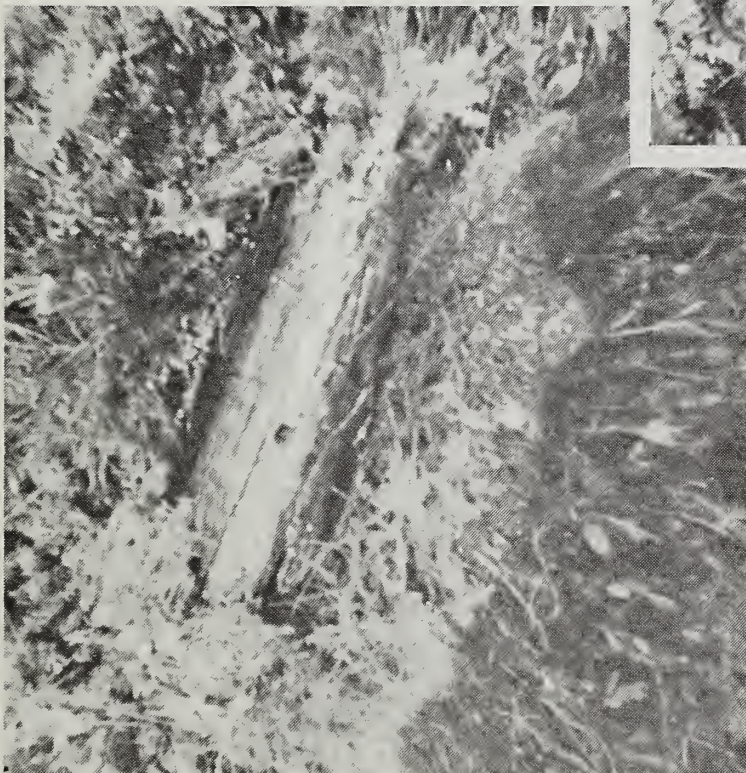
Blazed trees
on line not
noted.



Notches on
Line Tree

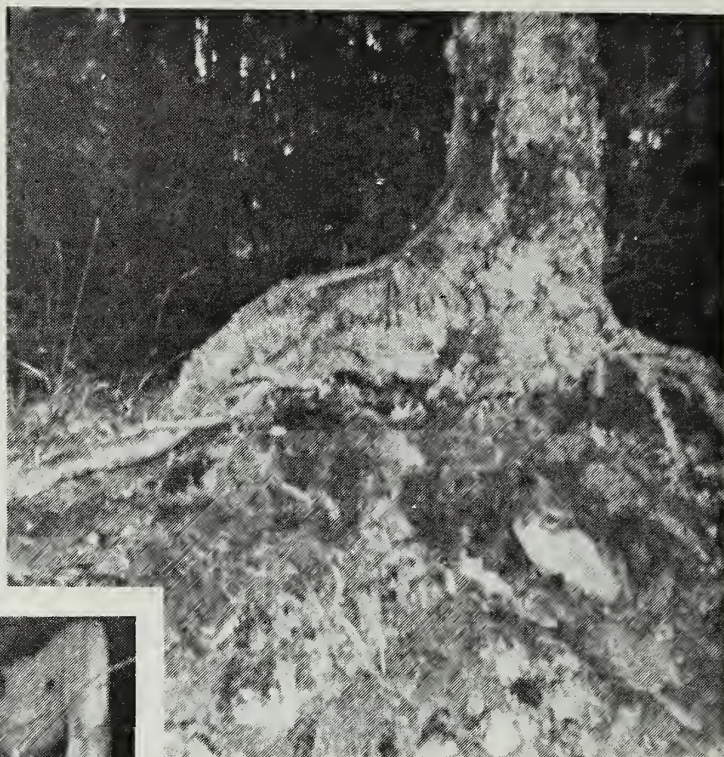


Fallen Hemlock B.T.
Below Swamp Moss



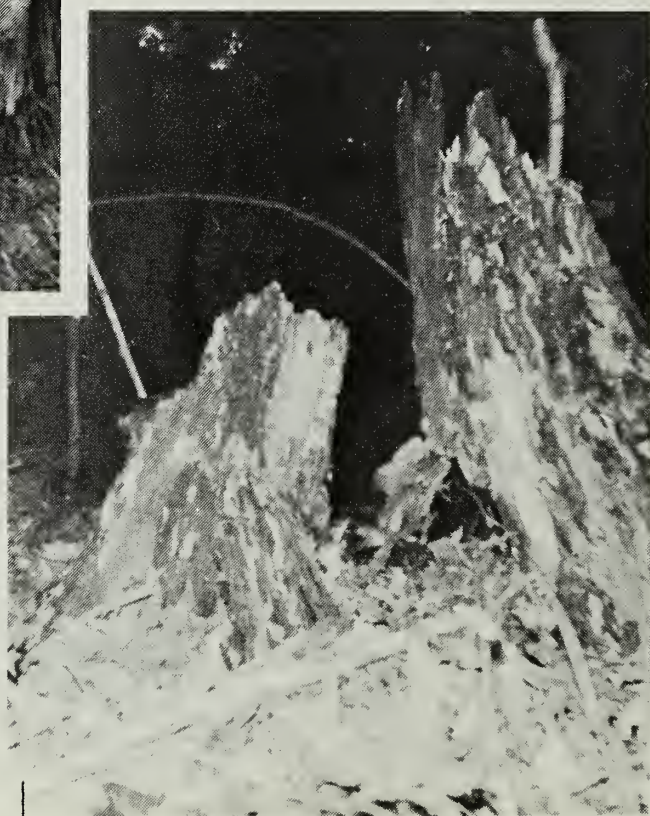
Fallen Tamarack B.T.
Below Swamp Moss

Hemlock B.T.
Under Yellow Birch



Remains of
Sugar Maple B.T.

Tamarack B.T.
Scribing Overgrowth





Remains of
White Pine B.T.

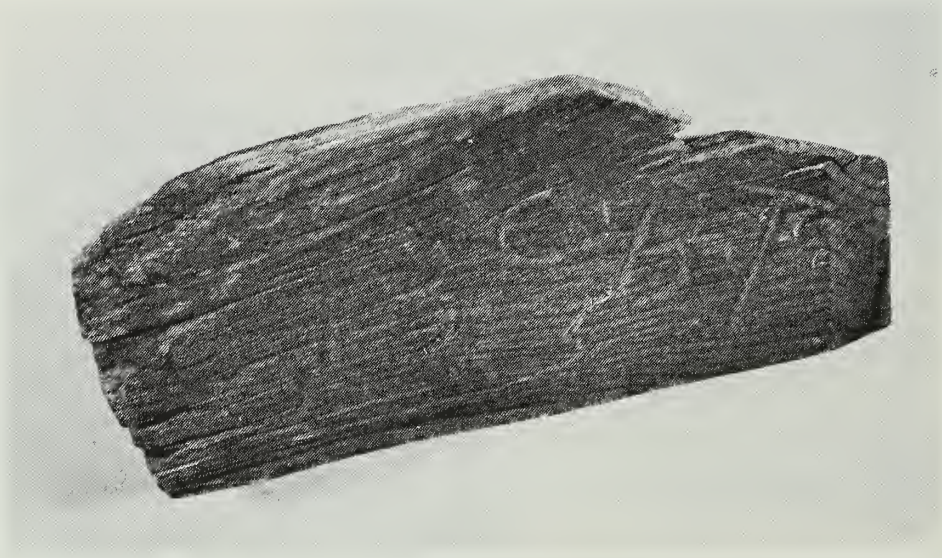
Burned White Pine B.T.



Cedar B.T.



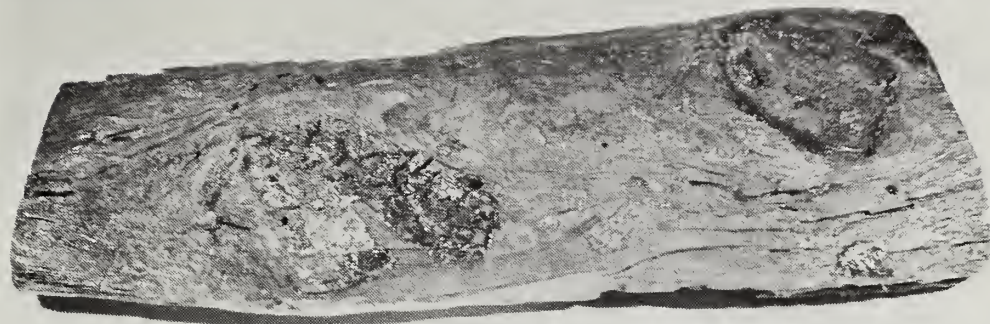
Jack Pine B. T.



White Pine B. T.



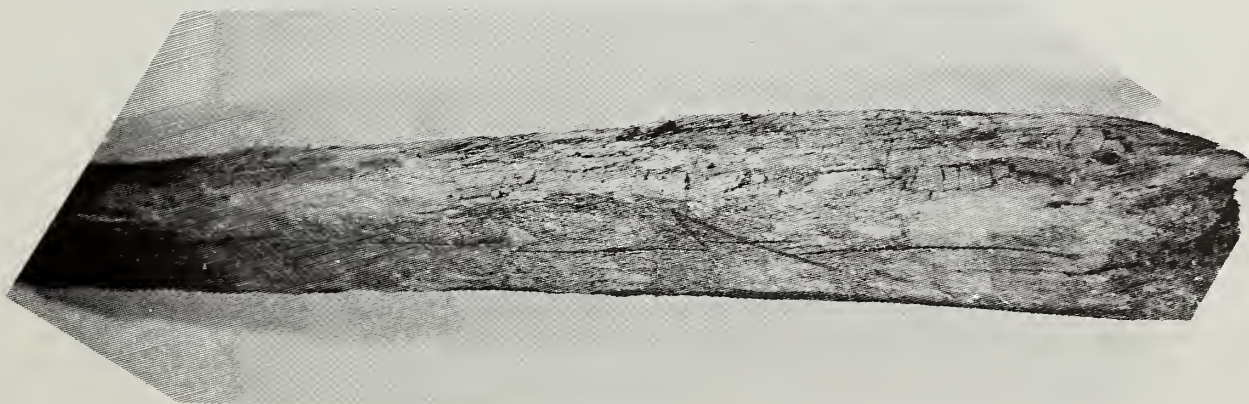
Spruce B. T.



Notches on Red Pine Line Tree



Tamarack B.T. Overgrowth Reverse Scribing



Cedar Corner Post

IDENTIFICATION OF DECAYED BEARING TREE EVIDENCE

The records of the original Government survey of the public lands in upper Michigan described the corner marker as being a wood post. Unless this post was located in a wet swamp and preserved by water, an original corner post has never been recovered. The linkage to the corner is the remaining evidence of the original bearing trees.

The identifying characteristics of the remaining bearing trees found in upper Michigan are:

Black Ash

1. Wood decays rapidly when cut.
2. Color remains light.
3. End cut of wood has open pores the size of pin holes.
4. Swamp type tree. Stump hole of tree is fair sized.
5. Bark is shallow furrowed. Peels off in powdery to corky fine scales.

White Ash

1. Found with upland hardwoods.
2. Bark rather thick and rough, dividing into diamond-shaped fissures. Often mistaken for young basswood.
3. Decays rapidly once it's cut.
4. Decayed wood brownish in color.

Aspen

1. Decayed remains can leave a distinct stump hole.
2. Aspen regrowth generally follows an aspen stand for general corner location.

Balsam

1. By digging along the roots, the roots will be found growing over older balsam. If the roots are growing over the remains of spruce, the evidence is not that of a balsam tree.
2. Wood coarse grained.

Basswood

1. Leaves large stump hole.
2. Has fast rate of decay.
3. It sprouts around the stump.
4. Basswood is growing in area if fire hasn't changed the soil conditions.

White Birch

1. On slow growing sites there is a possibility of finding the original bearing tree as a standing tree.
2. Windfall leaves a fair sized stump hole.

Yellow Birch

1. Dominant clue identification is the bark with its prominent lenticels. Outer shell bark can remain when interior of stump is completely decayed.
2. Longitudinal grain of wood is quite wavy. Sometimes called curly birch.
3. Badly decayed stump on wet ground has a greasy mushy feel.
4. A yellow birch having an exposed raised root system is a clue to finding a hemlock stump below these roots. A decayed hemlock stump is a choice site for sprouting yellow birch seeds.
5. Yellow birch is more likely found with hemlock or sugar maple than any other trees.
6. The color, substance, and feel of the decayed wood of yellow birch is similar to that of elm.

Cedar

1. Grows mostly in the swamp as a shallow rooted tree.
2. Fallen tree does not leave a stump hole.
3. Wood detected by smell (fragrant odor).
4. Tree identified by bark, shape, and leaves. Older standing trees are hollow. Bark furrowed, and peels off into shred-line strips. Wood is pale yellow-brown and rather coarse grained.
5. Best remaining living tree from the original survey.

Elm

1. Is a lowland type moisture seeking tree with a long spreading root system up to 20 feet from stump.
2. Does not leave a distinct stump hole.
3. Stump has very little taper.
4. Stump has a uniform sapwood-heartwood decay rate.
5. Decayed annual rings break off and curl. Large growth rings in wet site.
6. Bark remnants found at surface of ground.
7. Wood under bark is dark; inner core lighter in color.

Hemlock (occasionally also called Spruce Pine by G.L.O. Surveyors)

1. A reddish-brown decayed wood that discolours soil around stump.
2. Stump hole is 12" to 18" in depth.
3. Hemlock knots are found along the decayed fallen tree trunk. The size and direction of the knots are a clue as to the stump end of the tree.
4. Moisture contained in a hemlock stump will help it survive a ground fire.
5. Outer bark is reddish-brown and scaly, the inner bark is cinnamon red.
6. Sound wood in decaying tree is very hard and ill-smelling.

Sugar (Hard) Maple

1. In a decayed stump the bark is gone, the wood turns black, and flakes off in scales.
2. Circumferential decay rate not uniform.
3. Stump hole is distinct.
4. Resistance to fire is low.

Red (Soft) Maple

1. Very short lived tree.
2. Leaves a distinct stump hole if the tree was of any size before decay began.
3. Second growth can sprout from an old decayed maple stump.

Black Oak

1. Little chance of recovery of original trees.
2. Fast decay rate.
3. Leaves large stump hole.
4. Second growth oak usually found in area.

Jack Pine

1. No remains of bark, no noticeable odor of wood, but leaves a good stump hole.
2. Weak resistance to fire above ground, but fire scarred wood will be found below surface.

Red Pine (called Yellow Pine by U.S. Deputy Surveyors)

1. Wood has more distinct smell and is harder to chop in than white pine.
2. Leaves a good stump hole. No remains of bark.
3. Resistant to ground fires.
4. Yellow to white sapwood.

White Pine

1. Distinct pine smell to wood. Heartwood is last to decay. Wood light and soft and whitish sapwood.
2. When all wood is decayed, pine knots can still be found. Knots are 3" to 6" in diameter.
3. Leaves a distinct deep stump hole plus sound roots still in place.
4. Resistant to ground fires.

Black Spruce

1. Stump has fast rate of decay above ground, but roots may be found under wet moss, etc.
2. Found in cold bogs, swamps, and shores of lakes with tamarack.
3. Very few original black spruce B.T.'s recovered.

White Spruce

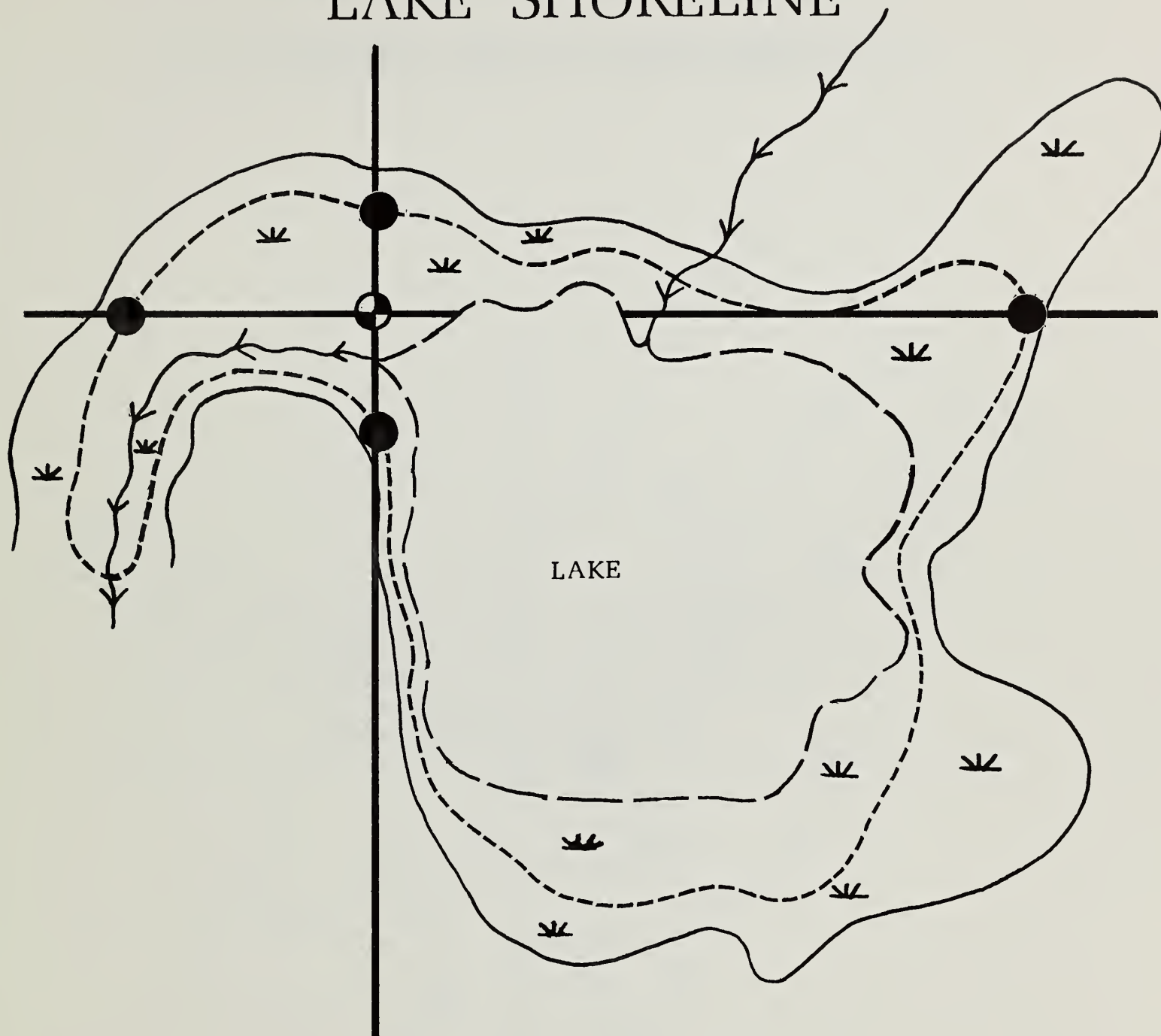
1. Little chance of recovery of original trees which were generally large at time of survey.
2. Shallow spreading root system. No stump holes.
3. Decayed wood breaks into large chunks. Growth rings widely spaced. Light in color.
4. In advance stages of decay hard to detect if wood is spruce or balsam.
5. Bark on old stumps is thin and light grayish-brown. It separates in thin scales.

Tamarack





1. Highly rot resistant but very few alive. Found in or at edge of swamp.
2. Decays by an outer layer of wood at a time. Decayed tamarack has lighter color than decayed hemlock.
3. Cut into dead sapwood has a faint distinct smell.
4. Diameter of tree same or not much larger than called for in original notes due to killing of tree by insects about 1900.
5. Bark on old stumps breaks up into small roundish scales.



The loss of remaining bearing tree evidence has increased rapidly in the last 5 years. The best recovery possibilities are for those bearing trees being red pine, white pine, cedar, tamarack, or hemlock. Bearing trees such as yellow birch, sugar maple, red maple, basswood, ash, spruce, and elm have decayed to a state of being stump holes and remnants. No evidence remains of aspen, balsam, jack pine, or white birch.

MEANDER CORNERS AND LAKE SHORELINE

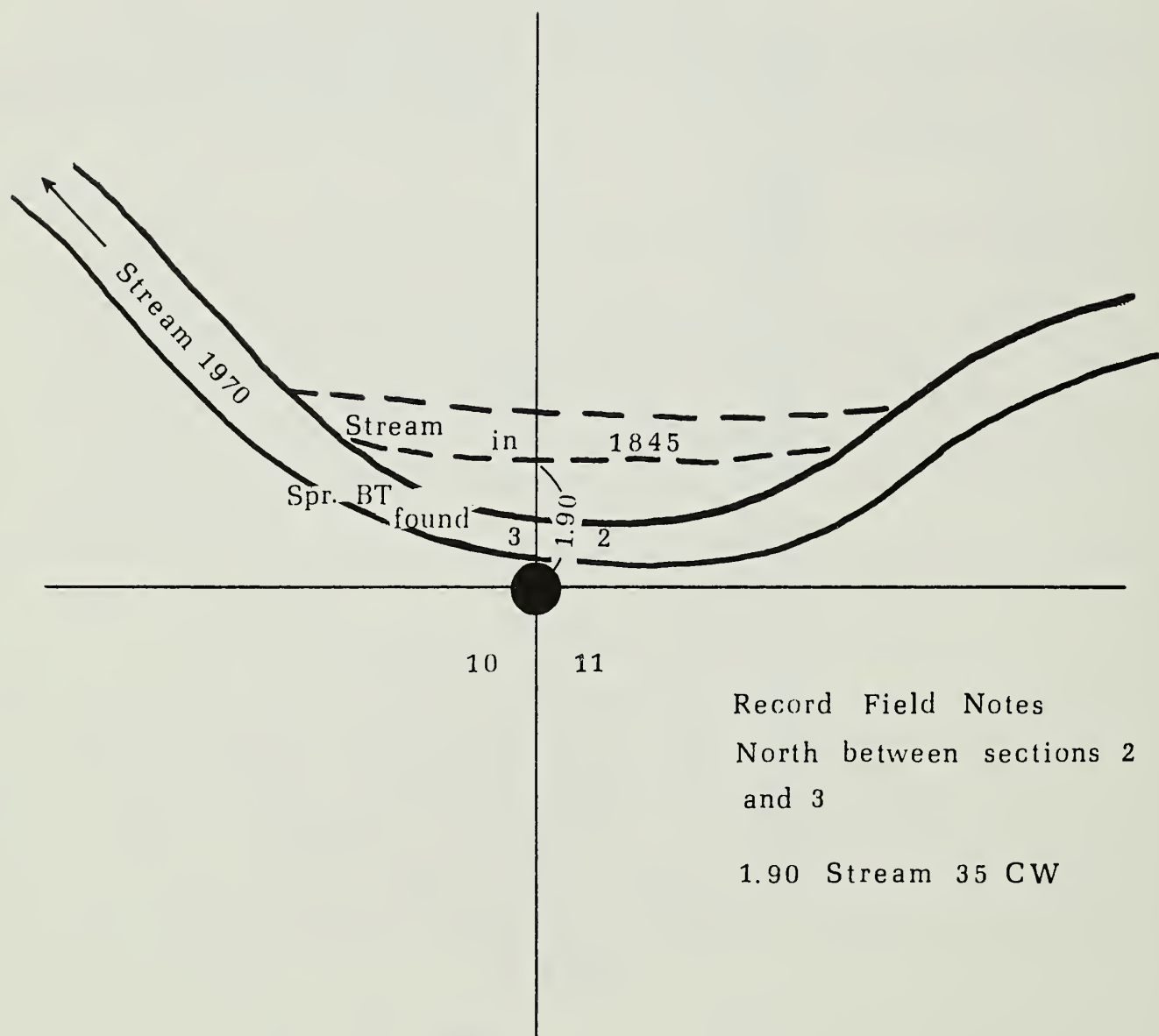


LEGEND

-  Edge of marsh
-  Lake shoreline 1845
-  Lake shoreline 1970
-  Section lines

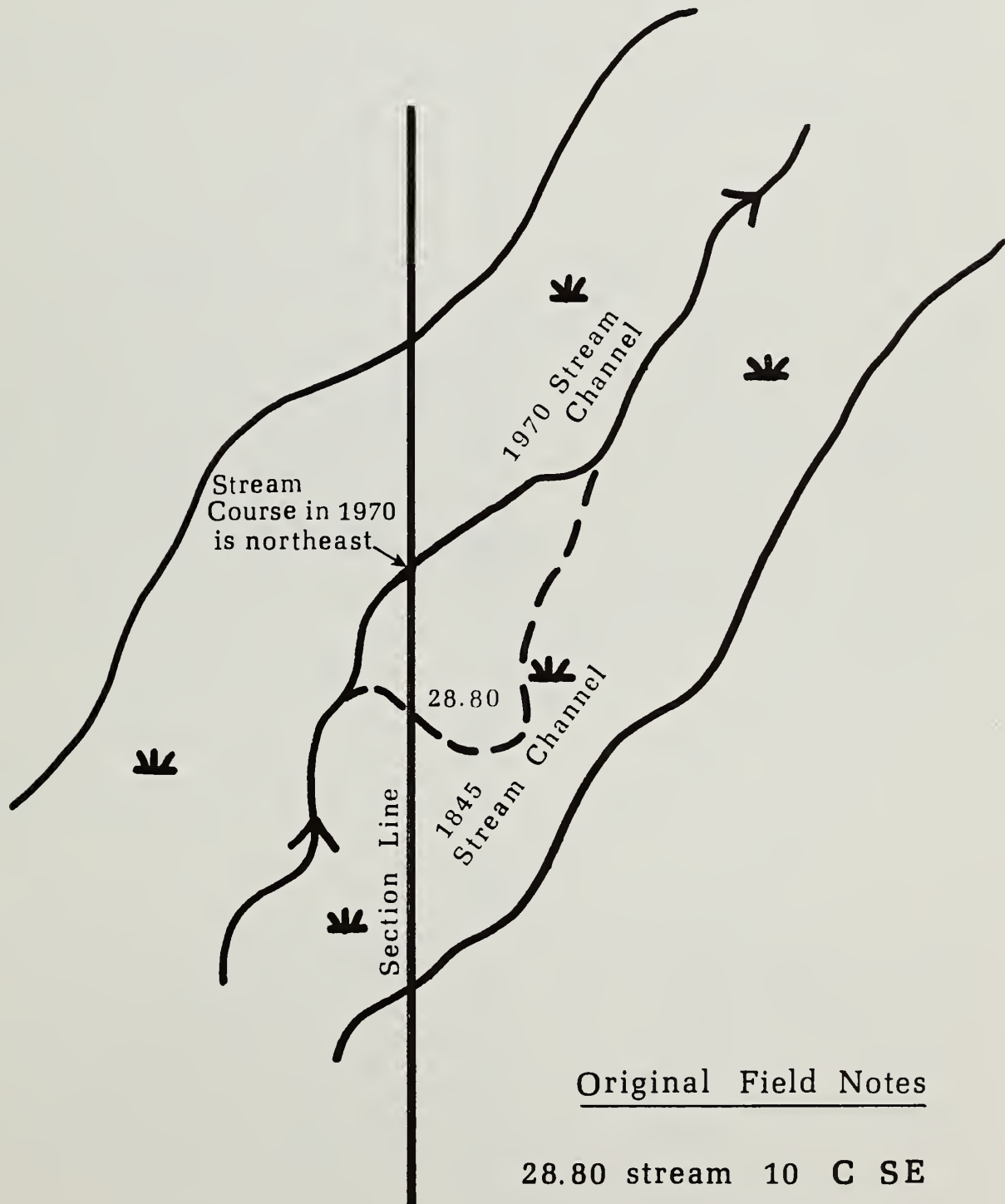
-  Recovered meander corners
-  Section corner to be restored from recovered meander corners

STREAM BEDS AND CORNER LOCATION

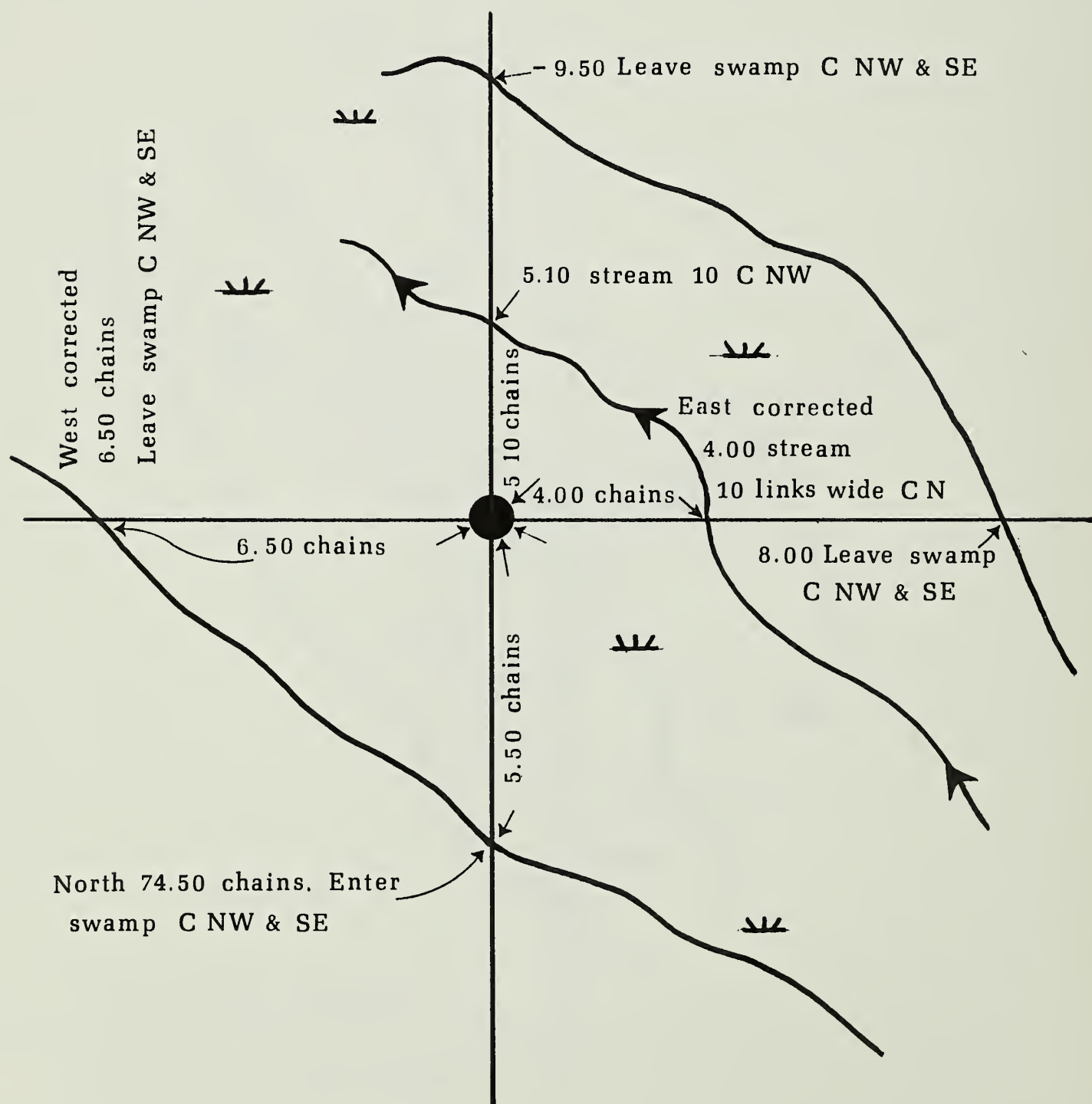


Note: Corner recovered 1.90 chains south of old stream bed as per record notes of original Government Survey

STREAM BEDS AND RECORD MEASUREMENTS



CORNER RESTORATION FROM NATURAL FEATURE CALLS



CORNER RECOVERY AND MONUMENTATION

Page 1 T. 44 N. R. 39 W.
 1/4 Cor. Common to sec's 14 & 23
 G.L.O. Notes:
 N. 89° 51' W. Corrected between 14 & 23
 1. 39.00 Enter Swamp NE 1/4 SW
 2. 40.00 Set 1/4 post
 3. Tam. 16" South 4 Lks. (2.6')
 4. Spruce 8" N. 40° E. 13 Lks. (8.6')
 Evidence Recovered:
 1. One chain east to edge of Swamp
 2. 4" x 4" x 36" Cedar stake scribed (1/4 S)
 3. Tam. stub 18", with scribing visible
 4. Decayed 12"-16" Spruce stump
 at N. 40° E., (8.6')

Page 2
 4 May 62
 Clear + 50°
 D. Lappala
 H. Johnson

The diagram shows a survey line starting from a corner point (represented by a small square) and extending to a "decayed Spruce Stump". The line is labeled "N. 40° E." and "8.6'". A perpendicular line segment of "2.6'" is drawn from the corner point to the main line, labeled "South". A "18" Tam. stub with scribing visible" is shown at the corner point. A north arrow points upwards.

Page 3
 T. 44 N. R. 39 W.
 1/4 Cor. Common to sec's 14 & 23
 at the corner position I
 set a 2" I.D. by 5' long, concrete
 filled, galvanized iron pipe,
 capped with a 3" circular brass
 tablet which I stamped to read:

The circular stamp contains the text: "T. 44 N. R. 39 W.", "1/4 S. 14", "1/4 S. 23", and "1962 R.L.S. 12585".

From which:

1. A 5" Spruce bears N. 42° E., 14.5'
2. A 6" Cedar bears S. 55° E., 22.7'
3. A 5" Cedar bears S. 10° 30' W., 12.9'

Page 4
 4 May 62
 Clear + 50°
 D. Lappala
 H. Johnson

The diagram shows three survey lines originating from a central corner point (represented by a small circle).
 - Line 1: "5" Spruce" bearing "N. 42° E." for "14.5'".
 - Line 2: "6" Cedar" bearing "S. 55° E." for "22.7'".
 - Line 3: "5" Cedar" bearing "S. 10° 30' W." for "12.9'".
 A north arrow points upwards.

ORIGINAL GOVERNMENT SURVEY
T46N R32W - Michigan Meridian
Section Line to Sections 16 - 17
by
F. Houck - U.S. Deputy Surveyor - 1851

S. 3'E. Corrected between Sections 16 & 17
10.19 White Pine 20"

28.00 Brook 5 Course ESE

35.50 Top of ledge 30 Course WNW

38.00 Enter swamp Course E

39.00 Brook 3 Course E

40.00 Set 1/4 post

Tamarack 8 N. 36 W. 10

Tamarack 12 S. 76 E. 5

42.50 Leave swamp Course ESE

48.97 White Pine 18

65.00 Enter swamp Course ESE

68.50 Leave swamp Course SE

70.21 Cedar 14

80.00 Section Corner 16, 17, 20, 21

Sugar 14 N. 49 E. 28

Sugar 12 S. 41 W. 48

EXAMINER'S SURVEY
T46N R32W - Michigan Meridian
Section Line to Sections 16 - 17
by
A.B. Wood - Examiner of Surveys - 1854

South between Sections 16 & 17

10.09	White Pine 18"
27.00	Enter swamp Course E&W
28.50	Leave swamp Course E&W
36.50	Descend ledge 25' Course E&W
37.30	Foot of ledge
38.10	Enter swamp Course E&W
38.96	Stream 2 Course E
39.83	Intersected 11 lks. west of post Tamarack 7 N. 38 W. 10 Tamarack 10 S. 77 E. 6
42.60	Leave swamp Course E&W
48.77	White Pine 18
55.80	Enter swamp Course E&W
58.00	Leave swamp Course E&W
64.80	Enter swamp Course E&W
68.80	Leave swamp Course E&W
69.96	Cedar 17 (station tree)
79.74	Intersect 14 lks. west of corner post Sugar 14 N. 50 E. 28 Sugar 12 S. 39 W. 48

The survey of this township appears to have been run after the manner required. The lines are well marked, the courses well established and well marked. I should judge this survey to have been executed with the Solar Compass. My packers came through the two northern townships of this contract and report the lines well marked and corners well established.

/S/ A.B. Wood
Examiner of Surveys

NOTES OF DEPUTY SURVEYORS

Note 1

The line between Sections 21 & 28 was run East, but the North and South line was run but not established, but after running through, the post was moved to its proper place and the intersection ascertained and was as stated in the notes. All other of the same nature - this note can be applied to note second.

Note 2

The line between sections 26 and 35 was run East, but the random not being run between sections 35 & 36. I set a post at 80 chains and then went to the South boundary of the Township and ran North to the center line and then ascertained the intersection. But was not entered in the notes until the last line in the days work. The reason why I thus worked was to take advantage of the clear weather and run as many of the lines as possible with the Sun.

Note 3

The line between Sections 1 & 2 run to the North boundary, corrected South $\frac{1}{2}$ mile, then West to the corner of sections 2 & 3 on North boundary and ran South to the center line. Then corrected North one mile between sections 14 and 15 - then East random between Sections 11 & 14 - then corrected North one mile and set a post for the corner of sections 1, 2, 11 and 12. Then randomed East between sections 1 & 12, corrected West between the same - then corrected the South half between sections 1 & 2 and gave bearings - the North half between sections 1 & 2 is not in the order in which it was done - it was an oversight in placing it where it is - the reason for working as I did is explained in note second.

Note 4

The omission of the process of getting over the lake in sections 2, 3, 10 and 11 was an oversight.

Note 5

Line between sections 7 & 18. Sent a man one mile South from the corner of sections 6 & 7 on the West boundary with an axman to run East between sections 7 & 18 while I corrected East between sections 6 & 7 and South between sections 7 & 8 and then chained and corrected West between sections 7 & 18 in the same manner between sections 8 & 17 - the object in so doing was to get the lines through by the Sun.

Note 6

The bearings at the corner of sections 28, 29, 32 and 33 was taken in pencil but in inking was overlooked.

/S/ A. Curtis
Deputy Surveyor

Note

Owing to a mistake in getting the distance over the lake on the first half of this line, the quarter section corner was established 2.50 chains East of where it belongs. (Quarter corner distance shown as 37.50 chains)

/S/ Austin Burt
Deputy Surveyor

Note

37.00 chains. The quarter post at 40 chains is cancelled and the proper distance being 37.00 chains, the quarter post will be established at that point.

Surveyor Generals Office
January 24, 1849

NOTES BY EXAMINER OF SURVEYS

I, A. B. Wood, Examiner of Surveys acting under instructions from Leander Chapman, Surveyor General, Northwest of Ohio, dated May 10, 1854 do solemnly swear that I have, strictly in accordance with the instructions of said Surveyor General, examined the original survey as described by me in the foregoing Field Notes which notes I do solemnly swear are the true and original records of the said examinations as aforesaid.

I do not think it necessary to extend the examinations of this contract farther as I believe the general character of the work to be fairly represented by the foregoing Field Notes.

The survey does not appear to have been executed after the manner required. Most of the random lines show signs of a correction, but the other lines (with the exception of the centerlines and some of the lines closing to the town lines) do not show any indication of having been corrected.

I saw but one campground in this township and that is by the stream half a mile west of the center and looks as if it had been occupied for a considerable length of time.

The lines in this township do not appear to have been run by the Solar Compass.

RESURVEY OF TOWNSHIP

East random between Sections 25 and 36.

13.25 Stream 10 C NE
38.00 Intersect East-West line from NNW
40.00 Set temporary post
73.50 Stream 4 C NE
79.50 Intersect East boundary at post

West corrected between Sections 25 and 36.

6.00 Stream 4 C NE
29.00 Sugar 10
39.75 Set Quarter post
Sugar 10 S40° E. 37 links
Sugar 8 N50° W. 30 links
Old Corner 2.50 chains North and 1.50 chains East.
47.00 Stream 10 C NE
49.00 Birch 12
49.60 Stream 10 C SE
66.35 Stream 10 C NE
69.18 Sugar 18
79.50 Section Corner

NOTE: Underlined notes basis for rejection of original survey of this section line.

CERTIFIED LAND CORNER RESTORATION

State of Michigan }
County of Ontonagon } ss.

I, Donald D. Lappala, do hereby certify that on the 14th day of October, 1969, I found evidence of the quarter section corner of section 28 and 29 Township 48 North, Range 43 West, Michigan Meridian, as described hereon; and that from this evidence I established a new monument and accessories as described hereon to perpetuate the original location of this corner:

Description of original monument and accessories and subsequent restorations:
Corner established by Austin Burt, U. S. Deputy Surveyor, in 1848.
Original bearing trees:

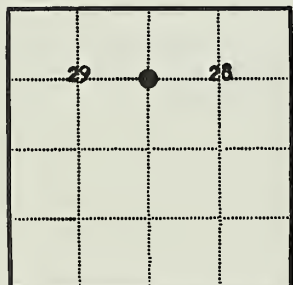
Yellow Birch	20"	S. 15° E.	40 links
Sugar Maple	10"	N. 6° W.	40 links

Description of corner evidence found:

Restored corner position at record bearing and distance from the original bearing trees. The first one is a 33" live yellow birch with scribing visible. Found stamp hole of the sugar maple bearing tree.

Description of monument and accessories I established to perpetuate the original location of this corner:
At the corner position I set a 2 inch inside diameter by 5 foot long, concrete filled, galvanized iron pipe, capped with a 3" circular bronze tablet which reads: T. 48 N., R. 43 W.; $\frac{1}{4}$; S-28, S-29; R. L. S. 12585; 1969, from which I established the following new blazed and scribed bearing trees:

5"	Yellow Birch	N. 50° E.	8.5 feet (12.9 links)
6"	Sugar Maple	S. 49° E.	16.1 feet (24.4 links)
6"	Sugar Maple	S. 28° W.	9.7 feet (14.7 links)



● - Corner monument restored
□ -

Resident witnesses _____

Dated at Bergland Michigan, this 14th day of October 1969.

Signature Donald D. Lappala Title Cadastral Surveyor
(County Surveyor, Registered Land Surveyor, or other duly authorized official)

Surveyors Registration No. 12585

Office of Register of Deeds County of Ontonagon

I hereby certify that the within instrument was filed in this office for record on the 12th day of May 1970 and was filed in Book No. _____ Page No. T-9 of County Records.

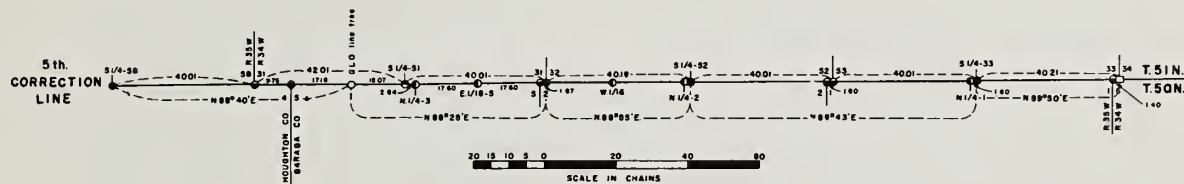
Signature Charles A. Reburn Title Register of Deeds

Township 48 North, Range 43 West, Section _____, Index No. T-9, Page No. _____

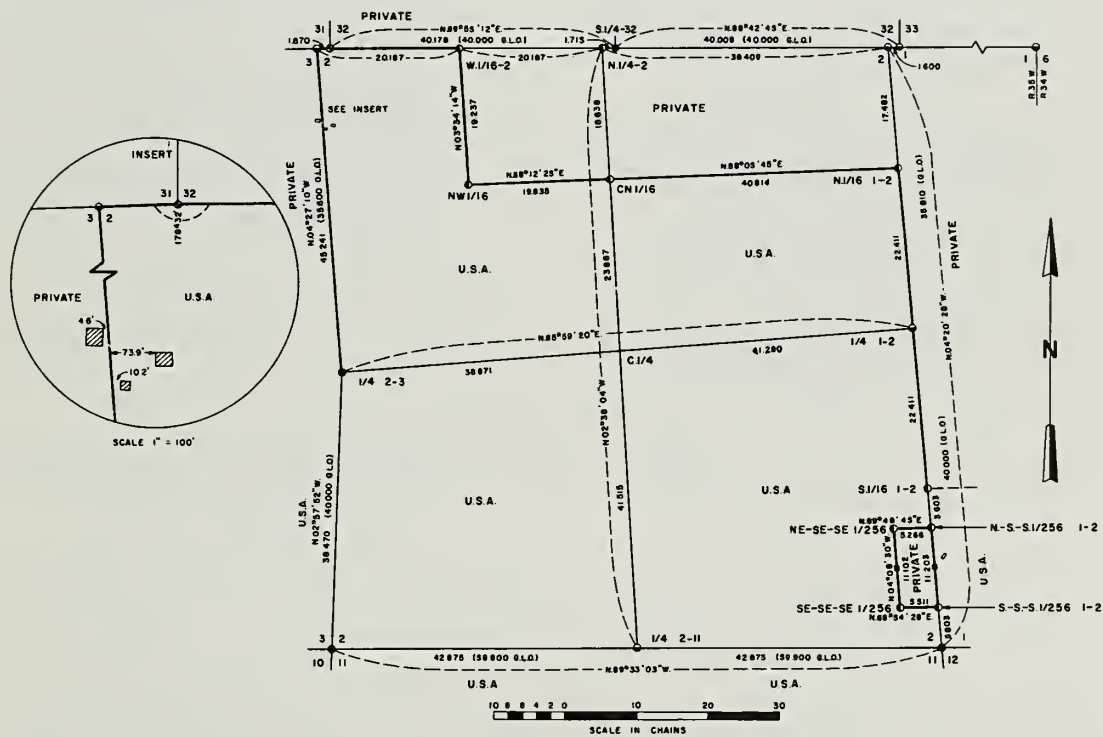
PLAT OF SURVEY U.S. GOVERNMENT LAND

Sheet 1 of 3

Being SW 1/4, S 1/2 NW 1/4, NW 1/4 NW 1/4, S 1/2 NE 1/4,
and SE 1/4 except SE-NE-SE-SE 1/4 and NE-SE-SE-SE 1/4
all in Section 2, T.50N., R.35W., Michigan Meridian
Township of Baraga, County of Baraga, State of Michigan



Note: All distances shown along 5th Correction Line are field measurements of this survey to the closest one-hundredth of a chain length.
The section line to sections 5-4 intersects the 5th Correction Line 518 feet south of the recovered clearing corner monument. The point of intersection is the legal corner position.



LEGEND

- Recovered Corner
 - Recovered Corner
 - ⊙ Restored Corner
 - ⊙ Established Corner
 - ⊙ Restored Corner
 - ⊙ Recovered Corner
 - Recovered original G.L.O. hemlock line tree - now 18" diameter stump.
 - Line post
 - ▢ Building
 - Hunting Camp
 - Boundary line between Government and private land
- Marked by wood post
Monumented with 2" inside diameter 5' long, concrete filled, galvanized iron pipe capped with a 3" circular brass tablet stamped to identify corner.
Position marked by 8" spike set in 16" maple stump.
Marked by 3/4" by 8" iron pin set 6" below surface of gravel road

PLAT OF SURVEY U.S. GOVERNMENT LAND

Sheet 2 of 3

Being SW 1/4, S 1/2 NW 1/4, NW 1/4 NW 1/4, S 1/2 NE 1/4,
and SE 1/4 except SE-NE-SE-SE 1/4 and NE-SE-SE-SE 1/4
all in Section 2, T.50N., R.35W., Michigan Meridian
Township of Baraga, County of Baraga, State of Michigan

GENERAL NOTES

This survey was made by the U. S. Department of Agriculture, Forest Service, as a retracement of the original Government survey of Section 2, Township 50 North, Range 35 West, Michigan Meridian, and as a retracement of 3 1/2 miles of the 5th Correction Line between the standard corner common to Sections 33-34, T. 51 N., R. 34 W. and the standard quarter corner of Section 36, T. 51 N., R. 35 W.

The purpose of this survey was to recover, restore and perpetuate the corners established by the original Government survey, to mark the boundary lines of U. S. Government land in Section 2, and locate the position of private buildings in relation to the section line common to Sections 2 and 3.

Prior to making this survey, I reviewed the manner in which this township was originally subdivided. I obtained a copy of the field notes of the original Government survey for this township and the 5th Correction Line. I examined the Baraga County records and obtained copies of surveys of record and deed descriptions of the adjoining properties. I consulted with the Michigan Conservation Department, State Highway Department, Upper Peninsula Power Company, local surveyors and local resident property owners for corner information and the status of existing property boundaries that would affect or could be affected by the retracement of the section lines and the subdivision of the section.

The original Government survey of this township was made in 1851. An intensive field search was made to recover the corners of the original survey of Section 2, and for corners of adjoining sections needed as control to restore lost corner positions of Section 2. Corners were also searched for and recovered along 3 1/2 miles of the 5th Correction Line to determine the relative position of local usage corners whose positions could not be verified by record evidence of the original Government survey.

Recovered, restored, and established corner positions are marked by monuments described in the map legend.

The corners recovered and new corner accessories added are as follows:

- Standard Section Corner to Sections 33-34, T. 51 N., R. 34 W. - Found marked by a wood post. Bearing and chainage west along old fence line to recovered south quarter corner of Section 33, T. 51 N., R. 34 W. in accordance with original field notes. Finding no contrary evidence, the post was accepted as marking true corner position.
- Standard Quarter Corner, Section 33, T. 51 N., R. 34 W. - Corner found marked by intersecting fence lines east and north and the decayed remains of scribed wood stake from the original Government survey. Corner position further verified by retracement measurements along old east and west fence line to record natural features. New corner accessories established:
Black Ash, 6", N. 69° W., 41 links (27.1')
Black Ash, 6", N. 11° 30' W., 56 links (36.9')
Black Ash, 8", N. 46° E., 29 links (19.4')
- Standard Quarter Corner, Section 32, T. 51 N., R. 34 W. - Corner position recovered by reference to the stump remains of both original bearing trees and the decayed remains of an old corner stake 6 inches below ground surface. Corner position verified further by measurements west along section line to recoverable record natural features. New corner accessories established:
Red Maple, 3", N. 64° W., 55 links (36.0')
White Spruce, 3", N. 29° W., 39 links (25.8')
White Spruce, 4", N. 56° E., 67 links (44.1')
- Standard Quarter Corner, Section 36, T. 51 N., R. 35 W. - Corner found marked by scribed wood post from the original Government survey and verified by record bearing and distance to two recovered original bearing trees. New corner accessories established:
Black Ash, 5", N. 61° W., 74 links (49.9')
O.L.C.P.T., Cedar, 17", N. 12° E., 33 links (22.0')
Cedar, 9", N. 82° E., 33 links (21.9')

NOTE - The 30 inch hemlock record line tree 55.09 chains west of standard corner to Sections 31-32, T. 51 N., R. 34 W. was recovered as a 48 inch hemlock stump. Position verified by comparison with record measurement to standard section corner.

The corners restored and new corner accessories added are as follows:

- Standard Section Corner to Sections 32-33, T. 51 N., R. 34 W. - By single proportionate measurement on line between the standard quarter corner of Section 32 and the standard quarter corner of Section 33. New corner accessories established:
Red Maple, 5", N. 19° 30' W., 26 links (17.1')
Red Maple, 5", N. 01° E., 34 links (22.2')
Red Maple, 5", N. 83° E., 19 links (12.8')
- Standard Section Corner to Sections 31-32, T. 51 N., R. 34 W. - By reference to the original Government notes of recoverable record natural features north between Sections 31-32 and east along the 5th Correction Line. Alfred Chartier, local resident for 50 years advised that the restored corner position was the same as the original corner he recovered in 1927. New corner accessories established:
Elm, 8", N. 75° 30' W., 111 links (73.2')
Balsam, 12", N. 57° W., 103 1/2 links (68.3')
Elm, 3", N. 29° 30' W., 46 links (30.1')
Witness Corner monument - 2" I.D. 5' long O.I. pipe with brass tablet
- Standard township corner of 5th Correction Line to T. 51 N., R. 34 W. and T. 51 N., R. 35 W. - By single proportionate measurement on line and between the standard quarter corner Section 36, T. 51 N., R. 35 W., and the recovered record line tree on the south line of Section 31, T. 51 N., R. 34 W. New corner accessories established:
Sugar Maple, 6", N. 80° 30' W., 49 links (32.4')
Sugar Maple, 4", N. 30° W., 36 links (24.9')
Sugar Maple, 7", N. 66° 30' E., 12 links (8.1')
- Standard Quarter Corner Section 31, T. 51 N., R. 34 W. - By single proportionate measurement between the standard corner to Sections 31-32 and the restored standard township corner and on line between the standard corner to Sections 31-32 and the record line tree on the south line of Section 31. New corner accessories established:
Sugar Maple, 13", N. 82° W., 91 links (60.1')
Sugar Maple, 16", N. 09° W., 28 1/2 links (18.8')
Hemlock, 17", N. 64° 30' E., 39 links (25.8')
Witness corner monument - 2" I.D. 5' long O.I. pipe with brass tablet
- Closing Northeast Township Corner, T. 50 N., R. 35 W. - By single proportionate measurement on line between standard section corner to Sections 33-34 and the standard quarter corner of Section 33, T. 51 N., R. 34 W. New corner accessories established:
Elm, 18", S. 88° W., 117 links (77.0')
Elm, 11", N. 38° W., 89 links (58.4')
Elm, 16", N. 20° 30' W., 102 links (67.4')
- Closing Corner to Sections 3-4, T. 50 N., R. 35 W. - Corner found marked by 2 inch galvanized iron pipe from which were found the decayed remains of two original bearing trees.
Sugar Maple, 7", S. 58° E., 58 links (38.3')
Sugar Maple, 6", S. 23° 30' W., 40 links (26.2')
Sugar Maple, 7", S. 69° W., 61 links (40.5')

This corner was recovered in 1927 by William C. Schwalm, County Surveyor of Baraga. The corner position was concurred in by the verbal testimony of an adjoining property owner. After extensive retracement and study, it became evident that the record connecting distance of 80 links west to the southeast township corner of T. 51 N., R. 35 W., the monument called for in the original field notes, is either fictitious or grossly out of place with respect to the record connecting line. The identified closing corner is actually over 600 feet out of position to the east, resulting in a distorted Section 3. I obtained a plat of survey of Section 15, T. 50 N., R. 35 W., from William C. Schwalm, surveyed by Art Pequette in 1927. This plat shows a deflection of more than 12 degrees in alignment to the east for the section line from the SW corner of Section 15 to the west 1/4 corner of Section 15. The remaining meridional section lines, to the 5th Correction Line, were aligned in the normal manner. It is then reasonable to presume that the west boundary being defective in alignment, resulted in the identified closing corner common to Sections 3 and 4, to be grossly out of position.

- Closing Corner to Sections 1-2, T. 50 N., R. 35 W. - By single proportionate measurement on line between the restored standard section corner to Sections 32-33 and the recovered standard quarter corner of Section 32. New corner accessories established:
Red Maple, 5", S. 07° E., 40 links (26.2')
Red Maple, 5", S. 26° 30' W., 31 links (20.8')
Red Maple, 6", S. 58° 30' W., 48 links (31.8')
- Closing Corner to Sections 2-3, T. 50 N., R. 35 W. - By single proportionate measurement on line between the standard section corner to Sections 31-32 and the restored standard quarter corner of Section 31. New corner accessories established:
Cedar, 7", S. 58° E., 25 links (16.6')
Red Maple, 7", S. 15° E., 34 links (22.2')
Red Maple, 4", S. 53° W., 35 links (23.3')
- Section Corner Common to Sections 1-2-11-12 - By reference to recoverable record natural features to the east and south in accordance with the notes of the original Government Survey. New corner accessories established:
White Spruce, 6", N. 57° W., 33 links (21.5')
Sugar Maple, 4", S. 59° E., 25 links (16.2')
Sugar Maple, 4", S. 03° E., 23 links (15.9')
- Quarter corner to Sections 1-2 - By single proportionate measurement on line between the southeast corner and the northeast corner of Section 2. New corner accessories established:
Cedar, 7", S. 82° E., 27 links (17.6')
Black Ash, 6", S. 11° E., 40 links (26.4')
Sugar Maple, 6", S. 36° W., 41 links (27.0')
- Section Corner Common to Sections 2-3-10-11 - By reference to recoverable record natural features to the east and north. Corner position further verified by retracement measurement of Section line to Sections 10-11 from the recovered original corner common to Sections 10-11-14-15. New corner accessories established:
White Spruce, 7", S. 76° W., 50 links (33.2')
Red Elm, 5", N. 36° 30' E., 34 links (22.6')
Red Pine, 4", S. 50° 30' E., 56 links (36.0')

PLAT OF SURVEY
U.S. GOVERNMENT LAND

Sheet 3 of 3

Being SW 1/4, S 1/2 NW 1/4, NW 1/4 NW 1/4, S 1/2 NE 1/4,
and SE 1/4 except SE-NE-SE-SE 1/4 and NE-SE-SE-SE 1/4
all in Section 2, T.50N., R.35W., Michigan Meridian
Township of Baraga, County of Baraga, State of Michigan

GENERAL NOTES (Continued)

11. Quarter Corner to Sections 2-11 - By single proportionate measurement on line between the southeast corner and southwest corner of Section 2. New corner accessories established:

Red Maple, 5", N. 21° W., 22 links (11.5')
Red Maple, 5", N. 86° E., 37 links (18.7')
White Spruce, 7", S. 03° 30' W., 57 links (28.5')

12. Quarter Corner to Sections 2-3 - By reference to the stump remains of two bearing trees of the original Government survey and recoverable record natural features to the north and south. New corner accessories established:

Sugar Maple, 1", N. 25° 30' W., 4 links (2.0')
Sugar Maple, 6", N. 56° 30' E., 21 links (10.5')
Red Maple, 5", S. 26° W., 10 1/2 links (5.2')

The corners established and corner accessories added are as follows:

1. North Quarter Corner Section 1, T. 50 N., R. 35 W. - By single proportionate measurement between the northeast township corner and the closing section corner to Sections 1-2 and on line between the standard section corner to Sections 32-33 and the standard section corner of Section 33. New corner accessories established:

Black Ash, 8", S. 22° E., 58 links (29.0')
Black Ash, 8", S. 20° W., 50 links (25.0')
Black Ash, 8", S. 66° W., 24 links (12.0')

2. North Quarter Corner Section 2, T. 50 N., R. 35 W. - By single proportionate measurement between the closing corner to Sections 1-2 and the closing corner to Sections 2-3 and on line between the standard quarter corner of Section 32 and the standard section corner to Sections 31-32. New corner accessories established:

Red Maple, 1", S. 75° E., 6 links (3.0')
White Spruce, 3", S. 24° E., 20 links (10.0')
Red Maple, 1", S. 57° W., 7 links (3.5')

3. North Quarter Corner Section 3, T. 50 N., R. 35 W. - By single proportionate measurement between the closing corner to Sections 2-3 and the closing corner to Sections 3-4 and on line between the standard corner to Sections 31-32 and the standard quarter corner of Section 31. New corner accessories established:

Sugar Maple, 3", S. 81° 30' E., 50 links (25.0')
Hemlock, 10", S. 62° E., 40 links (20.0')
Sugar Maple, 5", S. 20° 30' W., 38 links (19.0')

4. West Sixteenth Corner Section 2, T. 50 N., R. 35 W. - By single proportionate measurement between the closing corner to Sections 2-3 and the north quarter corner of Section 2 and on line between the standard corner to Sections 31-32 and the standard corner of Section 32. New corner accessories established:

U.P.P. Co. Pole #132, S. 82° 30' E., 172 links (86.0')
U.P.P. Co. Pole #131, S. 45° 30' E., 18 links (9.0')
Baraga County Telephone Co. Pole, S. 38° W., 135 1/2 links (67.8')

5. West Sixteenth Corner Section 3, T. 50 N., R. 35 W. - By single proportionate measurement between the closing corner to Sections 2-3 and the north quarter corner of Section 3 and on line between the standard corner to Sections 31-32 and the standard quarter corner of Section 31. New corner accessories established:

Cedar, 9", S. 01° W., 96 1/2 links (48.25')
White Pine, 21", S. 25° W., 764 links (382.0')
U.P.P. Co. Pole, 18", N. 12° 30' E., 31 links (15.5')

6. North Sixteenth Corner to Sections 1-2 - By single proportionate measurement on line between the east quarter corner and the northeast corner of Section 2. New corner accessories established:

Red Maple, 1", S. 39° E., 13 links (6.5')
Red Maple, 1", S. 26° W., 18 links (9.0')
White Spruce, 7", N. 53° 30' W., 18 1/2 links (9.25')

7. South Sixteenth Corner to Sections 1-2 - By single proportionate measurement on line between the east quarter corner and the southeast corner of Section 2. New corner accessories established:

Sugar Maple, 1", N. 85° E., 3 1/4 links (1.75')
Red Maple, 6", S. 45° 30' E., 55 1/2 links (27.75')
Sugar Maple, 3", S. 67° W., 26 links (13.0')

8. Center North Sixteenth Corner - By single proportionate measurement on line between the north quarter corner and the center quarter corner of Section 2. New corner accessories established:

Sugar Maple, 1", N. 75° 30' W., 4 links (2.0')
Sugar Maple, 1", S. 31° E., 23 links (11.5')
Sugar Maple, 6", S. 21° 30' E., 51 links (25.5')

9. Northwest Sixteenth Corner - Corner established at the intersection of the straight lines between opposite corresponding sixteen corners on the perimeter of the northwest quarter of Section 2. New corner accessories established:

Hemlock, 12", N. 10° 30' W., 6 links (3.0')
Sugar Maple, 5", S. 85° E., 16 links (8.0')
Red Maple, 7", S. 25° E., 9 1/2 links (4.75')

10. North-South-South 1/256 Corner to Sections 1-2 - By single proportionate measurement on line between southeast section corner of Section 2 and the south sixteen corner to Sections 1-2. New corner accessories established:

Sugar Maple, 3", S. 81° 30' E., 23 links (11.5')
Red Maple, 7", N. 25° 30' E., 27 1/2 links (13.75')
Red Maple, 8", N. 89° 30' W., 26 1/2 links (13.25')

11. South-South-South 1/256 Corner to Section 1-2 - By single proportionate measurement on line between southeast section corner of Section 2 and the south sixteen corner to Sections 1-2. New corner accessories established:

Red Maple, 1", S. 76° W., 19 links (9.5')
Red Maple, 6", N. 26° 30' E., 16 links (8.0')
Red Maple, 1", S. 08° W., 20 1/2 links (10.25')

12. Northeast-Southeast-Southeast 1/256 Corner Section 2 - Corner established at the intersection of the straight lines between opposite midpoint corners on the perimeter of the southeast quarter southeast quarter southeast quarter of Section 2. New corner accessories established:

Red Maple, 5", N. 06° E., 60 links (30.0')
Red Maple, 1", S. 36° E., 8 links (4.0')
Red Maple, 6", N. 75° 30' W., 25 1/2 links (12.75')

13. Southeast-Southeast-Southeast 1/256 Corner, Section 2 - Corner established at the intersection of the straight lines between opposite midpoint corners on the perimeter of the southeast quarter southeast quarter southeast quarter of Section 2. New corner accessories established:

Sugar Maple, 3", S. 69° 30' E., 18 links (9.0')
Sugar Maple, 5", S. 13° 30' W., 24 1/2 links (12.25')
Sugar Maple, 1", N. 19° 30' W., 11 links (5.5')

The transit-traverse control survey for the exterior boundaries of Section 2 closed by 0.2 foot in latitude and 0.9 foot in departure. The distances between corners along the 5th Correction Line were double chained to assure an accuracy of 1 part in 3000 or better.

All bearings shown are true bearings and were established by reference to a polaris observation.

A copy of this plat is on file in the Forest Supervisor's office at Ironwood, Michigan. The field notes and a copy of this plat are on file in the District Ranger's office at Ontonagon, Michigan.

SURVEYOR'S AFFIDAVIT

State of Michigan)
Baraga County) ss

I, Donald D. Lappala, Cadastral Surveyor, U. S. Forest Service, and a registered land surveyor in the state of Michigan, hereby certify that I have retraced that part of the 5th Correction Line beginning at the standard corner common to Sections 33 and 34, Township 51 North, Range 34 West, Michigan Meridian, Baraga County, Michigan, thence three and one half miles west to the standard one quarter corner Section 36, Township 51 North, Range 35 West, Michigan Meridian, Houghton County, Michigan.

I hereby certify that I have surveyed and divided all that part of Section 2, Township 50 North, Range 35 West, Michigan Meridian, Baraga County, Michigan being all the SW 1/4, S 1/2 NW 1/4, NW 1/4 NW 1/4, S 1/2 NE 1/4, and SE 1/4 except SE-NE-SE-SE 1/4 and NE-SE-SE-SE 1/4.

I further certify that I have carefully evaluated the relative position of local usage corners along the 5th Correction Line by retracement and recovery of original Government survey corners along side lines. I accepted only those corners conforming to the notes of the original Government survey.

The plat and the notes hereon are a correct representation of all exterior boundaries of the land described and the subdivisions made thereof. The improvements are at the location shown on the plat map. I have fully complied with the laws of the State of Michigan and with the rules for the survey of the public lands in surveying the same. The following persons acted as survey party:

Donald D. Lappala, Party Chief
Francis P. Chartier, Transmitter
Joseph V. Kapote, Chainman
Harvey W. Johnson, Chainman

Plat by: Donald D. Lappala
Date: June 1963

Donald D. Lappala
DONALD D. LAPPALA
Cadastral Surveyor, U. S. Forest Service
R.L.S. 12585

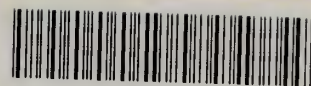
ACKNOWLEDGMENT

As colleague land surveyors of Don Lappala engaged in retracement surveys and subdivision surveys of the rectangular public land survey system and of the Colonial and States metes and bounds surveys, we can associate with and appreciate the retracement techniques and problems identified by this brochure.

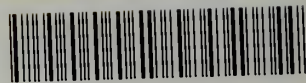
As land surveyors representing many years of retracement of these survey systems, we can without reservation identify the role of retracement as a basic and major function of land surveying. With the law being specific that the corners of the public land surveys as established and approved are unchangeable and that the identified original corners of the metes and bounds surveys are controlling, the significance of recovering and perpetuating these corners is paramount in locating title lines and title rights of landownership. Accordingly, we hereby acknowledge this brochure as being exemplary of the procedures, obligations, and responsibilities of the land surveyor in restoring and perpetuating the physical evidence of land corners. Time is of the essence while the remaining evidence can still be recovered.

Glenn A. Bergey
Charles E. Bobo
George D. Buttrick
William B. Cochran
James R. Hamm
Victor H. Hedman
Raymond E. McTavish

Elwood L. Olson
Jean F. Reswick
Jury L. Shreve
Andrew J. Sobiech
Kenneth E. West
John F. Wolf



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